

JOURNAL OF CLINICAL  
AND EXPERIMENTAL  
PSYCHOPATHOLOGY  
&  
QUARTERLY REVIEW OF  
PSYCHIATRY AND NEUROLOGY

— \* —

VOLUME XIX, NUMBER 3, JULY-SEPTEMBER, 1958

JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY

ARTHUR M. SACKLER, M.D.

MORTIMER D. SACKLER, M.D.

*Editors in Chief*

*The van Ophuijsen Center, New York, N. Y.*

FÉLIX MARTÍ-IBÁÑEZ, M.D.

*International Editor*

*Professor and Director of the Department of the History of Medicine,  
New York Medical College, Flower and Fifth Avenue Hospitals;  
and The van Ophuijsen Center, New York, N. Y.*

\*

QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY

WINFRED OVERHOLSER, M.D.

*Editor in Chief*

*Professor of Psychiatry, George Washington University School of Medicine,  
Superintendent of St. Elizabeths Hospital, Washington, D. C.*

---

*Published Quarterly by*

MD PUBLICATIONS, Inc.

Félix Martí-Ibáñez, M.D., President

*Editorial and Advertising Offices*

30 East 60th Street  
New York 22, N. Y.

*Circulation Offices*

1507 M St., N.W.  
Washington, D. C.

30 East 60th Street  
New York 22, N. Y.

The Journal of Clinical and Experimental Psychopathology and Quarterly Review of Psychiatry and Neurology® is published in March, June, September, December. The subscription rates are \$11.00 per year; \$28.00 for three years. Entered as second class matter at the Post Office at Washington, D. C., under act of March 3, 1879. Published by MD Publications, Inc., 1507 M Street, N.W., Washington, D.C. © Copyright 1958 by MD Publications, Inc. All rights reserved. Printed in U. S. A.

# JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY

ARTHUR M. SACKLER, M.D.  
MORTIMER D. SACKLER, M.D.  
*Editors in Chief*

*The van Ophuijsen Center, New York, N. Y.*

FÉLIX MARTÍ-IBÁÑEZ, M.D.  
*International Editor*

*Professor and Director of the Department of the History of Medicine,  
New York Medical College, Flower and Fifth Avenue Hospitals,  
and The van Ophuijsen Center, New York, N. Y.*

## INTERNATIONAL EDITORIAL BOARD

DR. TÖREBJÖRN OSCAR CASPERSSON  
*Institute for Cell Research and Genetics  
Karolinska Institutet  
Stockholm, Sweden*

DR. ROBERT A. CLEGHORN  
*1025 Pine Avenue W., Montreal, Quebec, Canada*

DR. UGO CERLETTI  
*Clinica delle Malattie Nervose e Mentali  
Viale dell Università, 30  
Rome, Italy*

PROF. JEAN DELAY  
*Hôpital Psychiatrique, Paris, France*

PROF. HONORIO DELGADO  
*Edificio, Belen 7, Lima, Peru*

DR. HENRI EY  
*1 Rue Cabanis, Paris (14e), France*

DR. M. FIAMBERTI  
*Vareze, Italy*

DR. DIOGO FURTADO  
*Casal Ribeiro 12, Lisbon, Portugal*

DR. FRITS GREWEL  
*Psychiatrische Kliniek (Pavill. III)  
Wilhelmina-Gasthuis  
Amsterdam W, The Netherlands*

PROF. DR. L. VAN DER HORST  
*University of Amsterdam  
Amsterdam W., The Netherlands*

DR. B. JACOBOWSKY  
*Uppsala University, Uppsala, Sweden*

DR. EMILIO MIRA Y LÓPEZ  
*Rua Candelaria 6  
Rio de Janeiro, Brazil*

DR. A. D. DE EGAS MONIZ\*  
*Lisbon, Portugal*

PROF. A. VALLEJO NÁGERA  
*Alcalá Galiano 8, Madrid, Spain*

DR. MAX REISS  
*Research Department, Bristol Mental Hospitals  
Fishponds, Bristol, England*

PROF. FINN RUD  
*Universitetet i Bergen, Psykiatrisk Institutt  
Neevengarden sykehus, Bergen, Norway*

PROF. RAMON SARRO  
*Barcelona, Spain*

\* Deceased

INTERNATIONAL RECORD OF



CLINICAL AND RESEARCH PSYCHIATRY

# NATIONAL EDITORIAL BOARD

PERCIVAL BAILEY, M.D.  
912 S. Wood Street, Chicago, Illinois

HERBERT G. BIRCH, Ph.D.  
545 West 111th Street, New York, New York

FRANCIS J. BRACELAND, M.D.  
Institute of Living, Hartford, Conn.

WALTER BROMBERG, M.D.  
2720 Capitol Avenue, Sacramento, Calif.

HERVEY M. CLECKLEY  
University Hospital, Augusta, Georgia

JACOB H. CONN, M.D.  
Johns Hopkins Hospital, Baltimore, Maryland

GEORGE DEVEREUX, Ph.D.  
Devereux Foundation  
Devon, Pennsylvania

RUDOLF DREIKURS, M.D.  
25 East Washington Street, Chicago 2, Illinois

ERIKA FROMM, Ph.D.  
Department of Neurology and Psychiatry  
Northwestern University Medical School  
Chicago, Ill.

LEONARD GILMAN, M.D.  
6 South Fullerton Avenue, Montclair, N. J.

LEO KANNER, M.D.  
Johns Hopkins Hospital, Baltimore, Maryland

HARRY A. LA BURT, M.D.  
Creedmoor State Hospital  
Queens Village 8, L. I., New York

H. B. LANG, M.D.  
644 Madison Avenue, Albany 8, New York

WILLIAM MALAMUD, M.D.  
Boston University School of Medicine  
80 East Concord Street, Boston 18, Mass.

SYDNEY B. MAUGHS, M.D.  
4500 West Pine Avenue, St. Louis, Missouri

L. J. MEDUNA, M.D.  
Willoughby Tower  
8 South Michigan Avenue, Chicago 3, Illinois

MERRILL MOORE, M.D.\*  
382 Commonwealth Avenue, Boston 15, Mass.

RAYMOND R. SACKLER, M.D.  
New York, N. Y.

MANFRED SAKEL, M.D.\*  
550 Park Avenue, New York, New York

R. BURKE SUITT, M.D.  
Veterans Administration Hospital  
Perry Point, Maryland

LAWRENCE F. WOOLLEY, M.D.  
490 Peachtree Street, N.E., Atlanta, Georgia

S. BERNARD WORTIS, M.D.  
410 East 57th Street, New York, New York

\* Deceased

\*

The *Journal of Clinical and Experimental Psychopathology* was founded in 1939 by V. C. Branham, M.D., as the *Journal of Criminal Psychopathology*. In 1944 the title was changed to the *Journal of Clinical Psychopathology*; in 1951 the journal became the *Journal of Clinical and Experimental Psychopathology*. The present title (*Journal of Clinical and Experimental Psychopathology and Quarterly Review of Psychiatry and Neurology*) was assumed in 1954.

# JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY

JULY-SEPTEMBER, 1958

\*

Somatic Therapy in Psychiatry . . . . .	181
<i>William Malamud, Sr., and William Malamud, Jr.</i>	
The Impact of Somatic Therapies on Course and Clinical Profile of the Schizophrenias . . . . .	195
<i>Fritz A. Freyhan</i>	
The Personality Reaction to Adrenalin and Histamine . . . . .	202
<i>Edwin O. Niver</i>	
An Analysis of Homicide-Suicide . . . . .	208
<i>Marvin E. Wolfgang</i>	
A Critical Study of Promazine Therapy . . . . .	219
<i>V. John Kinross-Wright and S. Bergen Morrison</i>	
The Inhibition of a Conditioned Response Following Arecoline Administration in Man . . . . .	226
<i>C. M. Franks, D. S. Trouton, and S. G. Lavery</i>	

**Clinical Psychopathologic Conferences** are often included as a feature of the JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY. This section will attempt to further the elucidation of correlations and associations between clinical, neurologic, psychologic, and biologic elements. Clinical case presentations illustrative of psychophysiopathologic disorders will be gathered from psychiatric hospitals, clinics, and psychiatrists throughout the world. Manuscripts together with accompanying illustrations should be forwarded to the JOURNAL OF CLINICAL AND EXPERIMENTAL PSYCHOPATHOLOGY, 30 East 60th Street, New York, N. Y., Attention: Editor, Clinical Psychopathologic Conferences.



# QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY



## PSYCHIATRY ABSTRACTS

### *Administrative Psychiatry and Legal Aspects of Psychiatry*

The Future of the Public Mental Hospital .....	237
The Treated Sex Offender .....	238

### *Alcoholism and Drug Addiction*

Delirium Tremens. Reduction of Mortality and Morbidity with Promazine .....	238
The Use of Methylphenidate (Ritalin) Hydrochloride in Alcoholism. Preliminary Report on its Diagnostic and Therapeutic Use .....	239

### *Biochemical, Endocrinologic, and Metabolic Aspects*

Pupil Dilatation in Normal and Schizophrenic Subjects Following Lysergic Acid Diethylamide Ingestion ..	239
---	-----

### *Clinical Psychiatry*

Dementia Praecox and Schizophrenia .....	240
Bias in Psychotherapists of Different Orientations. An Exploratory Study .....	240
A Criterion for Chronicity in Schizophrenia .....	241
Of Schizophrenia and the Schizophrenic .....	241
The Concepts of Bleuler. Approach to Phenomenologic Analyses .....	242

### *Geriatrics*

Admissions of Geriatric Cases to a Mental Hospital .....	242
The Use of Perphenazine (Trilafon) to Control Anxiety and Agitation in Aged Patients .....	242
The Influence of Antibiotics on Aged Mental Patients .....	243
Thoughts on the Problem of Aged Persons Suffering from Mental Disorders .....	243

### *Psychiatry of Childhood*

Mental Deficiency. Recessive Transmission to All Children by Parents Similarly Affected .....	244
---	-----

### *Psychiatry and General Medicine*

Characteristic Personality Patterns Seen in General Practice .....	244
Psychiatry in the General Hospital Today .....	245
Drug-Induced Depression—Fact or Fallacy .....	245

### *Psychiatric Nursing, Social Work, and Mental Hygiene*

A Follow-up Study of 255 Patients with Acute Schizophrenia and Schizophreniform Psychoses .....	246
Organic and Organizational Aspects of School Adjustment Problems .....	247
Social Rehabilitation for Mental Patients .....	247

### *Psychopathology*

Various Etiologies of the Schizophrenic Syndrome .....	248
Hysteria, the Hysterical Personality and "Hysterical" Conversion .....	249

### *Treatment*

#### *A. General Psychiatric Therapy*

Treatment of the Chronic Paranoid Schizophrenic Patient .....	249
Tranquillisers and Patient's Environment .....	250

#### *B. Drug Therapies*

The Current Status of the Tranquillizing Drugs .....	251
Chlorpromazine in Treatment of Chronic Schizophrenia .....	251
<i>Rauwolfia serpentina</i> in the Control of Anxiety .....	252
Effects of a Tranquilizer (Reserpine) on Psychodynamic and Social Processes .....	252

<i>C. Psychotherapy</i>	
The Essence of Mental Care. The Manifold Principles Active in Psychotherapy	253
Influence of Music upon Verbal Participation in Group Psychotherapy	253
An Analysis of Methods for Teaching Psychotherapy with Description of a New Approach	254

## NEUROLOGY ABSTRACTS

<i>Clinical Neurology</i>	
Neurology at the Crossroads	254
Neurology in the General Hospital	255
Clinical Significance of Impairment of Sound Localization	255
Neurologic Manifestations of Thrombotic Thrombocytopenic Purpura	256
Nature of Oedema in Paralyzed Limbs of Hemiplegic Patients	256

### *Anatomy and Physiology of the Nervous System*

The Effect of Drugs on Arousal Responses Produced by Electrical Stimulation of the Reticular Formation of the Brain	257
---	-----

### *Cerebrospinal Fluid*

Clinical Significance of Low Cerebral Spinal Fluid Pressure	257
---	-----

### *Convulsive Disorders*

Management of Epilepsy	258
Celotin in Patients with Refractory Epilepsy	259
Seizures and Syncope	259

### *Degenerative Diseases of the Nervous System*

Psychiatric Aspects of Multiple Sclerosis	259
The Familial Occurrence of Multiple Sclerosis	260
The Association of Cervical Spondylosis and Disseminated Sclerosis	260
Teamwork in Treatment of Parkinson's Disease	261

### *Diseases and Injuries of the Spinal Cord and Peripheral Nerves*

Subarachnoid Hemorrhage with Papilledema Due to Spinal Neurofibroma	261
---	-----

### *Electroencephalography*

Chlorpromazine. Use to Activate Electroencephalographic Seizure Patterns	262
The Significance of the EEG for the Diagnosis and Localization of Cerebral Tumours	262
Electroencephalographic Alpha Rate in Adults as a Function of Age	263

### *Infectious and Toxic Diseases of the Nervous System*

Diagnosis of Cerebral Schistosomiasis	263
Collagen Disease of the Nervous System: With Particular Reference to the Syndrome of Infectious Polyneuritis	264
Bilateral Loss of Vision from Cerebral Infection	264

### *Intracranial Tumors*

Brainstem Tumors in Children	265
------------------------------	-----

### *Neuropathology*

The Classification of Gliomata on the Basis of the Pathogenesis	266
Termination of the Central Pain Pathway in Man: The Conscious Appreciation of Pain	266

### *Neuroradiology*

The Process of Demyelination in the Central Nervous System. II. Mechanism of Demyelination and Necrosis of the Cerebral Centrum Incident to X-Radiation	267
---	-----

### *Treatment*

Facilitating Locomotion in Neurological Disease of Lower Extremities. Description of a New Appliance	267
--	-----

## BOOK REVIEWS

Analyzing Psychotherapy	268
The Psychoanalytic Study of the Child	268
Instinct in Man	269

JOURNAL OF CLINICAL  
AND EXPERIMENTAL  
PSYCHOPATHOLOGY  
&  
QUARTERLY REVIEW OF  
PSYCHIATRY AND NEUROLOGY

---

\*

---

Somatic Therapy in Psychiatry

William Malamud, Sr., M. D.,\* and William Malamud, Jr., M. D.†

BOSTON, MASSACHUSETTS

In his introduction to Kretschmer's *Physique and Character*,<sup>1</sup> a great clinician of the past generation, Professor R. Gaupp, expressed an idea that could well serve as a point of departure for this discussion. In attempting to evaluate the significance of Kretschmer's scientific contribution as viewed against the background of the past, Gaupp said: "Those who believe in the ultimate progress of scientific knowledge, and yet are also aware of the to and fro trends of basic formulations in the course of decades, regard the course of development of science in the form of a spiral in which there is a combination of forward motion superimposed upon the swings from one end of the spectrum to another; those, however, who in a more superficial outlook can only see the back and forth swing of these formulations and at the same time are discouraged by the narrow limits of scientific potentialities, unjustifiably regard this process as the movement of a pendulum which continually swings from right to left without ever attaining any higher levels."

In a general way, this concept is applicable to all phases of psychiatric progress, but it is particularly obvious in the development of somatic therapy, as is demonstrated by the successive array of the great number and variety of methods that have emerged throughout

---

From the Division of Psychiatry, Boston University School of Medicine, the Massachusetts Memorial Hospitals, and the Boston State Hospital. Presented at the Fifth Annual Psychiatric Institute conducted by the New Jersey Neuro-psychiatric Institute at Princeton, September 18, 1957.

\* Professor and Chairman, Division of Psychiatry, and Director of Research, Scottish Rite Committee on Research in Schizophrenia.

† Senior Teaching Fellow, Division of Psychiatry.

volume xix, number 3, September, 1958

the history of psychiatry.<sup>2</sup> Their ultimate fate was not always the same. Some of them were temporarily accepted, had their peaks of popular enthusiasm, complete with statistical demonstrations of their efficacy, were even frequently supported by apparently logical theoretical formulations of their mechanisms, and then in time fell by the wayside, never to reappear again. As examples we have, for instance, the bloodletting and purging that were so popular at the end of the eighteenth century, or the treatment of general paresis early in the present century by specially prepared opsonins developed on the basis of the belief that this disease was due to a *Bacillus paralyticus* related to the diphtheroid family. It is interesting to note that the proponents of the opsonin treatment not only claimed excellent results with the method but actually believed that they had demonstrated the presence of this organism in the spinal fluid of the patients.

More important, however, is the fact that a large number of methods that were introduced long ago, and that may not at the present time continue to be used in their original form, have nevertheless survived through a series of modifications, sometimes without the realization of the relationship of the modern versions to their precursors in the past. Thus, for instance, Samuel Woodward in his 1846 review of methods of treatment of that time, spoke critically of the use of camphor as practiced by an English psychiatrist who claimed good results in the chronic mental illnesses, in spite of the fact that, as Woodward puts it, occasionally the use of this medication was carried to such an extreme that it actually produced convulsions. Almost a hundred years later, we find the introduction and wide use of pentyl-enetetrazol and other convulsive therapies that are so closely related to what seemed to be obsolescent in the days of Woodward. Similarly we have the type of treatment that was in vogue toward the end of last century, based on the theory that thyroid pathology was in some way responsible for a number of psychiatric illnesses, and that led to large-scale thyroidectomies in catatonics. This method was quickly abolished, but more recently the idea of endocrine disturbances, including those of the thyroid, has been revived and, in some cases, one form of endocrine therapy or another reintroduced. This was also true of the surgical measures, particularly brain operations and trephining of the skull, which was practiced as late as 1892 and was subsequently discontinued but which has reappeared in a modified form in the various methods of psychosurgery.

Perhaps one of the most interesting examples of this type of progress is afforded by the history of the use of various drugs, the most important phase of which coincides with the introduction of chloral hydrate and bromides in 1870. This was followed by the development of barbiturates, particularly amobarbital sodium and thiopental sodium, which in many respects are still at the present time useful in the practice of psychiatry and which could also be regarded as a forerunner of the currently very widely used ataractic agents.

As we study the developments in this chain of events, we can discern the validity of Gaupp's idea in that we find that in the course of time, as our understanding of the effects of these methods becomes more adequate, enthusiasms nurtured by wishful thinking gradually drop off, and we narrow down the field of indications and contraindications to come to a realization of the actual merits of a given method. At the same time, with the acquisition of more knowledge through experimental investigations of the physiological mechanisms

involved, what may have been a purely empirical basis for the use of a given method gains the validity of rational treatment, and observations made possible during the use of these methods and curiosity as to the reason why some seem to have a more beneficial effect than others give rise to experimental work leading to a better understanding of the physiological mechanisms involved in behavior in general.

In approaching an evaluation of the methods that are used today, we can learn a great deal through this historical perspective and avoid pitfalls that commonly occur in regard to newly introduced measures. It is to be expected that proponents of a certain method will be influenced by their interest in it and cannot escape becoming overenthusiastic. Obviously this frequently obscures and interferes with the process of objective evaluation. It is just as true, however, that other workers, in checking the results of such treatment, are frequently motivated by hypercritical attitudes that tend to exaggerate defects and minimize benefits. This has been particularly well demonstrated in the controversies and discrepancies that have appeared in the literature in regard to most of the methods in use today, and that have reflected themselves even in the investigations of those who had genuine intentions of remaining objective.

It is with this in mind that we would like to discuss some of the somatic therapies that are in use in psychiatry today. A discussion of this type is rendered difficult because of the very large variety of methods and their modifications currently in use. We will therefore have to confine ourselves to only a few that can serve as good prototypes and will be concerned particularly with two general groups: (1) the ataractic drugs, of which the chlorpromazine groups and *Rauwolfia* derivatives are the ones most commonly used; and (2) the shock therapies as well as psychosurgery, the introduction of which preceded that of the ataractics but which are still being effectively utilized at the present time, although to a lesser extent than was hitherto the case. In view of the fact that the shock therapies and psychosurgery have been in use for a longer period of time and have been discussed more fully in the past, we will concentrate primarily on the ataractics.

A realistic appraisal of the relative merits of these methods should start out with a definition of the results that can be reasonably expected from the use of each one of them. Generally speaking, these can be formulated in terms of the following categories: (1) Results that are primarily symptomatic in that they influence beneficially undesirable clinical manifestations of a given illness. As examples, we have the use of anodynes or antipyretics in somatic therapy and that of suggestion in psychotherapy. (2) Results produced by affecting the pathophysiological process caused by the disease. As examples of these we have insulin therapy in diabetes, which affects the pathophysiological process without, as far as we know, removing the cause of the disease. Its analogue in psychotherapy is that of supportive and social treatment, where again we are trying to stem the tide of a pathological process without necessarily affecting the primary causes. (3) Results produced by eradicating primary causative agents. As examples of these we have the use of vitamin therapy in pellagra or antibiotics in infectious disease, as representative of somatic treatment, and psychoanalysis in some of the personality disturbances where the primary cause is attacked. (4) Results leading to prevention by attacking potential causative factors before they have actually

produced the disease. Examples of this would be vaccination or control of diet in the case of somatic diseases whose etiology is known, and educational measures and improvement of social settings in trying to prevent the development of personality disturbances.

These four types of results are not mutually exclusive, since any one of these measures may produce two or more of the results enumerated even if we do not at times recognize it. Thus we have a number of methods that, on the basis of empirical experience, have been used primarily for the alleviation of symptoms but that have subsequently been shown to have more fundamental effects on the pathological process or even in eradicating the cause. It is quite likely that some of the methods that are being used at present primarily for the alleviation of symptoms will subsequently be shown to have more far-reaching effects.

We would like to start out with a discussion of our present-day knowledge of the therapeutic effects of some of the ataractic drugs, particularly in regard to the conditions in which beneficial effects can be expected, the manner of administration that offers the most desirable results, the complications and contraindications, if any, and, finally, the findings that may indicate the mechanisms that are responsible for these effects. In undertaking this discussion we have relied largely on our own experiences in a variety of personality disturbances, particularly with the chlorpromazine and *Rauwolfia* groups, as well as on the experiences of other workers as they are reflected in the literature. To follow the experiences of other workers is by no means a simple task, since, in the first place, the interest generated in these methods of treatment has been so great that it is practically impossible to cover the entire literature, and at the same time there are so many controversial reports that it is difficult to discern those that are valid from others that are biased in one direction or another. We have given special attention to general reviews, appearing both in recent editions of textbooks and in periodicals, in which attempts were made to reconcile differences and approach the question in an objective manner. Of distinct value in this regard are the proceedings of symposia, particularly those carried out under the sponsorship of the Committee on Research of the American Psychiatric Association, where proponents of various points of view were afforded a forum for the presentation of their experiences and each symposium as a whole was then critically evaluated by reliable scientific workers who have had experience in the field.<sup>3</sup> It is true, however, that, since these drugs have been introduced so recently and most of us have not had a chance as yet to study the subject for a long enough period of time, personal bias is almost unavoidable, and probably occurs in our own reports. Nevertheless, it is possible even at this time to say that a number of effects, both beneficial and otherwise, can be regarded as fairly generally accepted.

Both the chlorpromazine group and the derivatives of *Rauwolfia* show a great deal of similarity in the effects they produce, and frequently what can be said of the one can also be said of the other, although, of course, differences do exist. The use of chlorpromazine was first suggested for its prolonged antihistaminic action and as a nonbarbiturate sedative, as well as for its beneficial effect specifically in patients with nausea and the anxiety that accompanies conditions producing it. Eventually this led to its use in psychiatric disorders.<sup>4</sup> It is definitely of value in a number of manifestations of mental diseases, particularly those with pronounced tension, anxiety, and motor disturbances. Its effects are quite striking in



patients whose behavior disturbance is associated with projections, such as hallucinations and delusions, and as a result it has been of great benefit in large state hospital populations, where it has reduced destructive behavior of patients to such an extent that the cost of the drugs was far outweighed by the savings in money formerly spent on windows, furniture, clothes, and the general care of the patients. In association with that, it has also improved, of course, the relationships between patients themselves and between them and personnel. Since one of the major practical reasons for committing patients to mental hospitals and confining them for a long period of time consists in their antisocial behavior, it has also led to a marked increase in discharges of patients following the quieting or tranquilizing effects of the drugs. Since, furthermore, the attempts at psychotherapy, either with individuals or groups, are rendered difficult by the disturbed behavior of the patient and his lack of communication with the therapist, it has obviously also shown its effects in the sense that after a brief period of treatment by chlorpromazine some of the patients have become more accessible and could be more easily communicated with therapeutically.

Both of these results, namely, the increase in discharges and the facilitation of psychotherapeutic measures, must at the present time still be looked on with some degree of skepticism as to their eventual validity. As was said previously, with the lessening of the tension and the disturbed behavior, the patient can more easily be taken care of on the outside and therefore does not as frequently need to be confined in the hospital as was originally the case. It is too early to say, however, how lasting the effect will be. In most cases, the patients who were discharged had to be continued on attenuated treatment with the drug in order to maintain symptomatic improvement, but even with this continued treatment the question of the development of a tolerance to it and the resurgence of disturbed symptoms is something that cannot be answered at this time. Furthermore, the tranquilizing effects appear to be associated with the development of a certain "couldn't care less" attitude, and, though the patient even temporarily is relieved of the disturbance in behavior, one fails to see in most cases the development of any positive motivation for an adequate effort toward adjustment to the social setting.

This is also a factor to be considered in relation to the facilitation of psychotherapeutic treatment. In many patients, the decrease of tension is associated with the development of a lack of motivation and, because of that, a failure in mobilizing the person's adjusting processes, which is so important in the course of psychotherapy. It is, furthermore, to be emphasized that on the whole most of the primary symptoms of the disease, particularly in the case of schizophrenia, namely, the emotional ambivalence and the thought disturbances, do not seem to be affected fundamentally by the drug. It would seem most likely that the fundamental causative factors are not altered, and because of this the primary symptoms still exist but have gone "underground," so to speak; the reaction to the causative factors has been dulled and, because of that, they do not lead to any disturbed behavior.

No valid evidence has been presented so far to demonstrate any specific action insofar as particular disease entities are concerned. The effect is primarily on certain behavioral characteristics rather than on any specific psychiatric syndromes, and it is only in those diseases in which some of the symptoms enumerated are predominant that the beneficial

effect is produced. It is because of this that we cannot at this time speak of specific effects, for instance, of chlorpromazine on schizophrenia, and instead can only speak of its effect on some of the symptoms for which, if they happen to be predominant and disturbing in a schizophrenic, the beneficial result will be produced. We will return to this in our discussion of the *Rauwolfia* derivatives.

Unfortunately for the purpose of this discussion, there is just as much controversy in regard to administration as there is in connection with the effects produced. Recommended doses vary anywhere between 25 and 5000 mg. per day. Depending upon the particular worker, similar results may be reported with very small doses as with high ones, and this variation even applies to the question of complications. At the present time it would seem that, if there is any consensus, it is to the effect that in most patients, particularly those who are more seriously disturbed, it is well to start with an initial intramuscular administration of approximately 50 mg. three or four times a day. After a day or two and depending on the reaction of the particular patient, one can shift to oral administration, and the dosage can then be increased. Many writers believe that it is well to increase the dosage to about 600 to 800 mg. per day, which can then be maintained or reduced in relationship to the progress shown by the patient. There does not seem to be too much evidence to indicate that the very large doses of 4000 and 5000 mg. in 24 hours are any more useful than the lower doses. Most of those who have surveyed the literature carefully are of the opinion that it is very important to keep in mind the individual patient and his particular reactions to the drug, and that the dosage should be varied depending upon them. Most observers, furthermore, recommend that in order to get adequate results one must also institute other forms of therapy with these patients if it is at all possible. Psychotherapy with individual patients or groups, occupational therapy, and manipulation of the social setting are all very important procedures in conjunction with the drug treatment. In connection with this, it is well to keep in mind that with the large numbers of patients, particularly in hospitals, and the relatively small number of therapists, the effect of the drug in lessening the disturbed behavior of the patient may have just as much of a dulling effect upon the interest of the physician to institute other measures as it has on the patient's motivation in cooperating with the therapist.

A great deal has been said about possible complications in the course of treatment with chlorpromazine, and a number of such untoward complications have been observed. Jaundice of an obstructive type, agranulocytosis, and parkinsonism are perhaps the most serious ones. It must be added, however, that the importance and serious nature of these has been over-emphasized by those who are hypercritically disposed toward this method of treatment. In the first place, the number of patients showing these untoward effects is relatively small in view of the very large numbers of people who have been treated by these drugs. Second, if we observe adequate caution in watching for the appearance of such symptoms and if the drug is discontinued when these symptoms appear, there is no reason to feel that these complications will become irreversible. Finally, some of these symptoms, particularly parkinsonism, if discovered early can be adequately treated with small doses of benztropine methanesulfonate (Congentin, 1 mg. twice a day) or other suitable drugs without any serious danger to the patient. A number of other mild complications can easily be dealt with fre-



quently even without withdrawing the drug or, at most, with a reduction of the dose. Nevertheless, it is, of course, of great importance to be alert and to take care of these problems when they first begin to manifest themselves.

The derivatives of *Rauwolfia serpentina* were first introduced into this country in the treatment of hypertension. The observations that were made of the general effect on the behavior of hypertensive patients has led to their use in the treatment of personality disturbances. The effects are very similar to those of chlorpromazine in that they, too, produce beneficial effects in the acute disturbances of behavior by a lessening of tension, aggressiveness, anxiety, and motor hyperactivity. The most commonly used derivative is reserpine, although a number of the other alkaloids have been of distinct value. In a recent study, made by our group,<sup>5</sup> of a large number of schizophrenic patients in which seven of the derivatives were used, we found that the effect of the drugs primarily influenced certain behavior characteristics, mainly those of hostility, assaultiveness, noisiness, hyperactivity, and similar symptoms, which are usually regarded as secondary manifestations of schizophrenia. Very little effect has been observed on the more fundamental or primary symptoms, such as emotional ambivalence, autism, and thought disturbances. The most striking effects were observed by us in the use of rescinnamine and Triserpine. In this study, we have also tried to ascertain the question of the carry-over of the improvement after the drug has been discontinued, and here too we found that, in regard to the particular symptoms referred to, rescinnamine was the most effective, although some carry-over was found in a number of the others. It was also found that there was a variation in the effects of the different derivatives in that they tended to show a certain amount of specificity in regard to disturbances of special behavior characteristics. The group studied was one of chronic schizophrenia, and we would not be justified in generalizing from this study in regard to the treatment of acutely ill patients and patients who are suffering from disturbances other than schizophrenia.

Insofar as complications are concerned, the two most important in this group of drugs are hypotension and mood depression. Some tendencies toward other minor disturbances, more or less akin to those produced by chlorpromazine, must also be carried in mind. Insofar as administration is concerned, we found that there is not much difference between parenteral or oral administration; the dose of choice is usually from 2.5 to 5 mg. daily. The oral administration, of course, is easier and is preferable with cooperative patients.

A number of workers have recommended the use of combinations of drugs, particularly chlorpromazine and reserpine. At the present time it is doubtful whether this is likely to produce any more beneficial results than the use of either one, although it must be kept in mind that, depending upon the individual patient, some tend to react better to one than to the other of the drugs, and it may be found useful to shift from one to the other if beneficial results are not obtained. A number of other drugs have been introduced; the ones used most commonly next to those already described are meprobamate (Miltown),<sup>6</sup> azacyclonol (Frenquel),<sup>7</sup> pipradol hydrochloride (Meratran),<sup>8</sup> and iproniazid (Marsilid).<sup>9</sup> These have not been in use for as long a period of time as the two that were described, and for the present it is doubtful whether it would serve any useful purpose to elaborate on them.

So far we have discussed, primarily, the use of these drugs in hospitalized psychotic patients. All of them, and perhaps even more frequently the last three mentioned, have also been used extensively in ambulatory patients, both psychotic and psychoneurotic. Not enough evidence has been reported that would make it reasonable to consider them as adequate measures per se in the treatment of psychoneuroses. The treatment of choice here still remains psychotherapy, and at best the ataraxics could be used as adjuvant measures. Again we must consider the danger of decreased motivation produced by the use of drugs both in the patient and in the physicians; psychotherapy may be more difficult and cumbersome than drug therapy, but it is certainly preferable in terms of the effects produced.

In discussing the somatic therapies in psychiatry, one must keep in mind that the shock therapies, the introduction of which preceded that of the ataraxics, still play an important role in this field. This is particularly true of electric convulsive therapy (ECT).<sup>10</sup> In the first place there are certain conditions, such as some depressions, that do not respond to the ataraxics but that have been demonstrated to respond very favorably to ECT. There is no question but that the method of choice, as far as somatic therapy is concerned, is still electric shock; this is particularly true of the agitated depressions but also to some extent of any condition in which depression of mood is an important element in the disease. This method has been in use for a comparatively long time and, because of that, is much better known in terms of its indications, preferable methods of administration, and results obtained. It is doubtful whether in the present discussion further evaluation of ECT is indicated. It is true that a number of conditions in which it was used seem to respond much better to the ataraxics at this time, and, since the method of administration is easier and less "shocking," so to speak, the ataraxics have to a large extent displaced this method of treatment in such cases. It is also well to remember that, in the development of depressions as complications, particularly as a result of the *Rauwolfia* products, electric shock can be used to counteract such effects and is definitely indicated.

Insulin shock therapy, which enjoys the distinction of having been the first of these methods to be introduced into psychiatry, has definitely fallen off recently in the frequency with which it is being applied. It is very likely that one of the reasons for the decline in its use may be the fact that it is a more cumbersome method, is more expensive, and can be used in comparatively smaller numbers of patients than either electric shock or the ataraxics; it may be, too, we are being influenced by our desire to use the easier and less complicated methods. A good many observers, however, have come to consider this method at the present time as applicable in a much smaller number and variety of conditions than was originally considered. Schizophrenic patients, particularly of the paranoid type and especially those who do not respond to other methods, are known to be beneficially affected by insulin and in these cases it should be seriously considered. Whether eventually, when the enthusiasm for the widespread use of ataraxics has subsided and their more specific indications have been established, some of the earlier methods will begin to be more widely used again is something that only time will prove.

The various operative procedures grouped under the general term of "psychosurgery," which were, at one time, used quite widely, have also largely been displaced by other methods,

including not only the ataraxics but also electric shock. Here again the method has been in use for a number of years, its indications and contraindications have been widely discussed, and there does not seem to be any great need for further discussion at this time. The prevalent opinion now is that surgical procedures of this type are indicated only as a last resort in patients, particularly those with involutional psychoses, who have failed to react to other methods.

From the observations reported so far, it is safe to conclude that these methods exert a definite effect on a variety of symptoms of personality disturbance and, from the practical point of view of dealing with the ever-mounting problem of mental illness, there is no question that their usefulness has been amply demonstrated. The question is, do the effects go beyond the stage of symptom alleviation in the sense that they counteract the pathological process or even the primary causes of mental illnesses? In order to answer this question, it is necessary to appraise our knowledge of the fundamental nature of these diseases and to see whether the existence of relevant relationship can be demonstrated experimentally between them and the physiological action of the therapeutic methods used. A most appropriate point of departure in such a discussion is afforded by Krehl's concept of the "meaning of symptoms;" he emphasizes the fact that they can only be adequately understood if we consider them as manifestations of the disease as "a dynamic process rather than an abnormal state."<sup>11</sup> In a recent publication,<sup>12</sup> it was pointed out that, insofar as personality disturbances are concerned, the following factors are involved: (1) The dynamics of active participation in the development of the clinical picture by both the noxious factors and the organism that is affected by them. The manifestations of the first represent the injury produced by the noxious agents, whereas the manifestations of the second represent defense mechanisms mobilized by the organism. The therapeutic agent, to be effective, should aim at combatting the first and reinforcing the second. (2) The dynamics of time, which refers to the historical background of the development of the individual as basic in producing the symptom complex presented at any given time. Therapeutic methods to be effective should include a consideration of past experiences as well as present realities. (3) The dynamics of homeostasis, which refers to the continuous trend toward the establishment of equilibrium in a system where the balance has been disturbed. In a pathological condition produced by an imbalance between two mutually antagonistic components, the therapeutic procedure should have as its goal the establishment of equilibrium, without overshooting the mark and creating a new imbalance. (4) The dynamics of relationship of parts within a biological unit. Therapeutic methods in order to be effective should take into consideration the adequate function of the organism as a whole rather than concentrating on any single part of it.

As we approach an attempt to evaluate the nature of the impact of the somatic therapies on the pathophysiological process of the disease, we must keep the afore-mentioned considerations in mind if we are to establish the ultimate beneficial effects of these methods. It is highly encouraging to find that, aside from the practical value that the methods described have undoubtedly had in psychiatric practice, it was of equal, if not greater, importance that they have given rise to a vast number of experimental studies that have not only thrown light on the understanding of the action of these procedures but have also added a great

deal to our knowledge of the mechanisms of human behavior in general. In the comparatively short time that has elapsed since the inception of the use of these methods, and particularly since the introduction of experimental investigation of their action, the literature has already become so broad and complex that it is impossible at this time and in the present context to give a comprehensive review of it. We can only point out some of these studies as examples of what has already been done, the questions that have emerged as a result of their findings, and the needs and potentialities for future research.

Of great significance in this work was the introduction of a series of chemical substances, both endogenously produced in the course of metabolism and exogenous, that have been demonstrated to give rise to behavior disturbances that in some respects are closely related to symptoms of mental disease. We are referring here to the so-called hallucinogens, which, when given in adequate quantities, sometimes surprisingly small, produced in normal individuals transitory manifestations of such symptoms as distortions in time and space perception, anxiety, tensions, projections, and in some cases even disturbances in the thinking processes. On the other hand, it could be demonstrated experimentally that they also produced definite changes in certain physiological and metabolic processes of the individual. Of the exogenous substances used in these studies, the most extensive work was done with mescaline, lysergic acid diethylamide (LSD-25), and yohimbine; whereas the endogenous substances are represented by a number of adrenalin derivatives such as adrenolutin. A series of attempts have also been made to compare the effects, both on behavior and physiological functions, of these so-called hallucinogens and the ataractic drugs. The results obtained point in the direction of the possibility of determining the fundamental mechanisms of the beneficial effects of a number of the somatic therapeutic agents. Thus, for instance, Marrazzi and Hart have reported observations of this type in regard to the properties that are involved in the functioning of the synapse.<sup>13</sup> They found that such substances as LSD-25 produce an inhibition of cerebral synaptic transmission. As opposed to this, the ataraxics, such as chlorpromazine and reserpine, tend to decrease this inhibitory effect. Furthermore, chlorpromazine and similar substances act as prophylactic agents in reducing the inhibitory effect of the hallucinogens. It is of interest to note the effects of serotonin, a substance normally found in the body, which, although it has been reported to have the characteristics of an antagonist to the hallucinogens, nevertheless in certain quantities may also produce an increased synaptic inhibition. This brings up the reciprocal relationship between antagonistic substances: under certain conditions their effects may be reversed because they stimulate increased production of the very substance whose activity they tend to depress. Further support of the mutually opposed effects of hallucinogens and ataraxics has been pointed out by Toman et al<sup>14</sup> in their study of electric shock seizure latency. Here it has been shown that, whereas various types of stress settings increase seizure latency, some of the ataraxics tend to reduce this latency at a dose level that produces tranquilizing effects. At the same time, it has also been shown that chlorpromazine, for instance, has certain effects on the metabolism of phosphorus, which in many respects is counterposed to the findings that have been observed either in patients suffering from schizophrenia or in those who have been subjected to the effects of LSD-25. A series of studies of the production of adenosine

triphosphate (ATP) in schizophrenic patients, undertaken by Gottlieb and Frohman,<sup>15</sup> has shown that the level of ATP in the blood of normal individuals is increased fourfold when insulin is administered in small doses. As contrasted with this, they found that in patients suffering from the more severe forms of schizophrenia the ATP level, following similar administration of insulin, is sometimes not changed at all and in many cases is paradoxically decreased. A decrease of ATP has also been reported by Grenell<sup>16</sup> after the administration of LSD-25; whereas the opposite, namely, an increase in accumulation of ATP levels, was found following the administration of chlorpromazine. Considering the universal observation of decreased energy output in schizophrenic patients, these findings lead us to regard the increased production of ATP after the administration of chlorpromazine as indicative of a definite effect produced by the ataractic drugs upon the pathological process. Finally, as another link in this chain, it is noteworthy to point out that effects similar to those produced by such exogenous hallucinogens as lysergic acid have been observed by Hoffer<sup>17</sup> and his co-workers to be produced by the administration of certain derivatives of adrenalin, such as adrenolutin, which points out the need of investigating the possibility that abnormal quantities of such metabolites may be produced in the course of these diseases and may be responsible for the development or, at least, the facilitation of appearance of pathological behavior.

All these findings must be objectively evaluated at their present level of significance. It is of great importance to note that certain chemical substances either introduced from the outside or, possibly, produced in the patients in the course of the illness can give rise to certain behavior disturbances that in some respects are similar to those observed in certain mental diseases. In view of the fact that certain therapeutic methods, such as the ataraxics, affect such symptoms beneficially both in patients suffering from mental disease and normal individuals subjected to the administration of such substances, and, furthermore, since these therapeutic agents also show opposite types of electrophysiological and metabolic phenomena, it would follow that these therapeutic agents not only exert symptomatic alleviation but actually attack the pathophysiological processes produced. In this respect we could think of their action as belonging to group two of therapeutic results mentioned in the introduction, more or less similar to the effects of insulin in diabetes. There are, however, two other factors that must be kept in mind. In the first place, we must re-emphasize the fact that symptoms as they appear in any disease may be the original result of the effects of the noxious agents or may represent defense mechanisms on part of the organism in reaction to the injury produced by the causative factor. If only the defense mechanisms were to be affected, the permanency of the beneficial effects of such therapeutic agents could be seriously questioned and one would even have to consider the possibility of deleterious effects. Second, as in the case of diabetes, we would not be justified in considering the effects as necessarily produced by direct action on the etiologic factors. The removal of the causative factors, and even more so, their prevention, is of necessity only possible when we know the exact nature of these causes. This, unfortunately, is not the case in most of the mental diseases. Thus it is therefore that, although there are definite indications that the effects of some of these therapeutic agents go further than simply being of symptomatic value, and that they actually

exert an influence on the pathophysiological process, a great deal more investigative work has to be done before we can make any definite statement about the ultimate degree of efficacy and durability of these therapeutic agents. This, of course, does not under any circumstance devalue the very important practical significance of the use of these agents in the case of symptoms that, regardless of their etiology, in themselves make it impossible for the person to adjust himself to his setting.

In conclusion, it is well to keep in mind the danger of the development, in regard to all of these methods, of certain attitudes that are likely to interfere with progress. New methods of necessity involve the establishment of precedents and ventures into new areas. Those workers who are practical minded quite justifiably view these with a certain amount of caution and feel called upon to stem the enthusiasm and overevaluation of those who are carried away by the interest invested in these new ventures. There is a great need therefore of maintaining a spirit of objective curiosity along with constructive thinking. Opportunities must be given for the proper application and experimental trial of new ideas, providing that the safety of the patient and the avoidance of obvious waste of effort are taken into consideration, and we must guard against the tendency to remain static in the face of changing times. The history of psychiatry and of other sciences shows many instances where resistance by the overcautious and overskeptical, resulting in unreasonable opposition to new ideas, has inhibited and delayed the application of methods that have eventually proved to be of great benefit. The names of Pasteur and Semmelweis represent occurrences of this type in general medicine. One of the most striking examples of such a reaction in psychiatry was the resistances that were encountered by Freud and his followers in their attempt to introduce the principles and techniques of psychoanalysis. Those of us who have eventually accepted the applicability of these methods should be particularly open minded in regard also to the somatic therapies. It is true that essentially sound ideas will eventually prove themselves in spite of resistance, but, aside from the fact that some of them actually may be lost because of too much resistance, the mere fact that their progress may be delayed is in itself a very unfortunate phenomenon that should be avoided. At the same time, however, we must also take into consideration the psychological set of the enthusiastic proponent of a given idea, who naturally tends to overestimate the real value of his particular project and who overlooks its shortcomings. It is important therefore to maintain a realistic attitude and, while being open minded and tolerant, also to remain objective and thus contribute to the spiral-like progress of scientific knowledge.

## RESUMEN

Se presenta en este trabajo una revisión de algunas terapias somáticas que se emplean en la actualidad: drogas atarácicas, incluyendo el grupo de la cloropromazina y derivados de la *Rauwolfia*; "shocks"; psicocirugía. La cloropromazina y los derivados de la *Rauwolfia* dominan las manifestaciones clínicas de las enfermedades mentales; sin embargo, sus efectos parecen estar asociados en varios pacientes con un estado de indiferencia, lo que da por resultado una falta de motivación positiva. Hasta ahora, no existe evidencia válida de



que actúen específicamente sobre particulares aspectos de la enfermedad. La dosificación debe ser de acuerdo con cada caso individual y para obtener mejores resultados debe usarse una terapia coadyuvante. En algunos pocos pacientes, las drogas atarácicas producen complicaciones. En la esquizofrenia crónica, diferentes derivados de *Rauwolfia* muestran ser específicos para especiales características de la conducta. Se emplearon combinaciones del grupo de la clorpromazina y los derivados de *Rauwolfia*, sin que parezca que produzcan mejores resultados. Los tratamientos de shock todavía desempeñan un papel importante, especialmente la ECT (terapia electroconvulsiva), para cualquier estado en el cual la depresión espiritual es un elemento importante e incluso para la depresión producida por los productos de *Rauwolfia*. La terapia por el shock insulínico ha declinado. Sin embargo, los pacientes esquizofrénicos, especialmente los de tipo paranoico que no responden a otros métodos, responden a la insulina. La psicocirugía parece ahora estar indicada sólo como un último recurso en los pacientes que no reaccionan con otros métodos, especialmente los que padecen psicosis regresiva. Aparte del valor práctico de los métodos descritos, éstos han dado lugar a numerosos estudios experimentales que aumentaron nuestros conocimientos sobre el mecanismo de la conducta humana. Nuevas investigaciones pueden determinar los mecanismos fundamentales afectados por los agentes terapéuticos somáticos y permitirnos atacar los procesos patofisiológicos de la enfermedad mental.

## RESUME

Une revue est présentée de quelques thérapeutiques somatiques en usage aujourd'hui: les remèdes ataraxiques, comprenant ceux du groupe de la chlorpromazine et les dérivés du *Rauwolfia*; les traitements de choc et la psycho-chirurgie. La chlorpromazine et les dérivés du *Rauwolfia* agissent sur les manifestations cliniques de la maladie mentale; toutefois, leurs effets paraissent, chez beaucoup de malades, s'accompagner d'indifférence, ce qui entraîne l'absence de toute motivation positive. Il n'y a jusqu'à présent aucune preuve valable que ces remèdes agissent d'une manière spécifique sur une maladie déterminée. La posologie doit être individualisée et il convient de recourir à une thérapeutique adjuvante en vue d'obtenir les meilleurs résultats possibles. Chez quelques rares malades, les ataraxiques entraînent des complications. Dans la schizophrénie chronique, différents dérivés du *Rauwolfia* font preuve d'une valeur spécifique contre des caractéristiques particulières du comportement. On a employé des associations d'agents du groupe chlorpromazine et des dérivés du *Rauwolfia*, mais cet emploi combiné ne paraît pas produire de meilleurs résultats. Les traitements de choc jouent encore un rôle important, en particulier l'électrochoc, dans tous les cas où la dépression est un élément notable, et même pour combattre la dépression due aux dérivés du *Rauwolfia*. La méthode thérapeutique de Sakel est en déclin. Toutefois, les schizophrènes, en particulier les paranoïaques qui ne répondent pas aux autres méthodes, répondent au choc insulinaire. La psycho-chirurgie semble aujourd'hui ne devoir être employée qu'en dernier ressort chez les malades ne répondant pas aux autres thérapeutiques, notamment dans les cas de psychose régressive. En dehors de leur valeur pratique, les méthodes considérées ont l'avantage d'avoir donné naissance à de nombreuses études

expérimentales qui ont enrichi notre connaissance du mécanisme du comportement de l'être humain. Des recherches ultérieures permettront sans doute de déterminer le mécanisme fondamental touché par les agents thérapeutiques somatiques et nous permettront d'attaquer directement le processus pathophysiologique de la maladie mentale.

## REFERENCES

1. KRETSCHEMER, E.: *Physique and Character*, New York, 1925.
2. MALAMUD, W.: *History of Psychiatric Therapies in One Hundred Years of American Psychiatry*, New York, Columbia University Press, 1944.
3. HIMWICH, H. E. (ed.): *Tranquilizing Drugs*, Washington, D. C., American Association for the Advancement of Science, 1957.
4. WINKELMAN, N. W., JR.: An appraisal of chlorpromazine. General principles for administration of chlorpromazine, based on experience with 1,090 patients, *Am. J. Psychiat.* 113:961, May, 1957.
5. MALAMUD, W.; FLEMING, A. M.; MIDDLETON, P. M.; FRIEDMAN, T. T., AND SCHLEIFER, M. J.: Evaluation of Rauwolfia in treatment of schizophrenia, *Am. J. Psychiat.* 114:193, Sept., 1957.
6. PENNINGTON, V. M.: Meprobamate, a tranquilizing drug with muscle relaxant properties in psychotic cases. In: HIMWICH, H. E. (ed.), *Tranquilizing Drugs*, Washington, D. C., American Association for the Advancement of Science, 1957, p. 125.
7. RINALDI, F.; HAYNES, E. E.; RUDY, L. H., AND HIMWICH, H. E.: Therapeutic effects of azacyclonal in psychotic patients. In: HIMWICH, H. E. (ed.), *Tranquilizing Drugs*, Washington, D. C., American Association for the Advancement of Science, 1957, p. 115.
8. GOTTLIEB, J., ET AL: Chlorpromazine, Reserpine, Meratran and Frenquel, Washington, D. C., American Psychiatric Association, 1955.
9. FERREIRA, A. J., AND FREEMAN, H.: A Clinical Study of Marsilid. In press.
10. Report of Meeting of Eastern Psychiatric Research Association, monograph supplement to *Dis. Nerv. System* 18(7), July, 1957.
11. KREHL, L.: *Pathologische Physiologie*, ed. 11, 1921.
12. MALAMUD, W., AND OVERHOLSER, W.: Multidisciplinary research in schizophrenia, *Am. J. Psychiat.* 114:865, April, 1958.
13. MARRAZZI, A. S., AND HART, E. R.: An electrophysiological analysis of drugs useful in psychotic states. In: HIMWICH, H. E. (ed.), *Tranquilizing Drugs*, Washington, D. C., American Association for the Advancement of Science, 1957, p. 9.
14. TOMAN, J. E. P.; EVERETT, G. M., AND JEANS, R. F.: Seizure latency method and other procedures for antipsychotic drugs. In: HIMWICH, H. E. (ed.), *Tranquilizing Drugs*, Washington, D. C., American Association for the Advancement of Science, 1957, p. 23.
15. GOTTLIEB, J. S., AND FROHMAN, C. E.: Personal communication.
16. GRENELL, R. G.: Considerations regarding metabolic factors in the action of chlorpromazine. In: HIMWICH, H. E. (ed.), *Tranquilizing Drugs*, Washington, D. C., American Association for the Advancement of Science, 1957, p. 61.
17. HOFFER, A.: Adrenolutin as a psychotomimetic agent. In: HIMWICH, H. E. (ed.), *Tranquilizing Drugs*, Washington, D. C., American Association for the Advancement of Science, 1957, p. 73.



# The Impact of Somatic Therapies on Course and Clinical Profile of the Schizophrenias

Fritz A. Freyhan, M. D.\*

FARNHURST, DELAWARE

A discussion of the impact of somatic therapies on schizophrenia is bound to be controversial, not only because of the perplexing diversity of reported results, but in view of the existing polarities of etiological concepts. Evaluations of therapeutic achievements have passed through stages in which the focus of attention has shifted from the clinical symptoms of the illness to the person-being-ill; it has now centered on the person-making-well. Those who postulate specific pathophysiological processes as causes of the illness seek therapies that exert specific biological effects. Others, who share the conviction of psychological determinants, define the role of therapeutic methods in terms of psychological transactions. When it comes to the evaluation of the results of somatic therapies, the choice of criteria of interpretation varies accordingly. Where some see a biological modification of a somatic process, others attribute the changes to psychotherapeutic transference, or to the fact that the type of treatment enabled a particular type of psychiatrist to assume a therapeutic attitude toward his patient.

However, the difficulty of evaluating treatments does not end with the multiplicity of judgmental criteria. We are not only confronted with the dilemma of answering the question "How did the treatment work?" but with the uncertainty "Did the treatment work?" This is presumably a question that lends itself to statistical study and comparative analysis. The traditional chaos in the composition of psychiatric statistics precludes any easy answer. The most crucial and certainly the most neglected aspect of our knowledge concerns spontaneous or natural courses of the illness. The idea of a natural course of the illness is no longer popular. Many object because they suspect that "natural course" implies an endogenously determined prognosis. But this is not a compelling consequence, nor does it seem reasonable to restrict the knowledge of the historical course and outcome of schizophrenia in defense of aprioristic ideas. Highly intriguing evidence suggests that schizophrenic patients showed a far greater capacity for social recovery 100 years ago, in the days of moral treatment, than during decades of custodial care and therapeutic conservatism that preceded the introduction of modern treatments of schizophrenia. Bockoven, in his study of the treatment of mental illness in hospitals in the United States during the period of moral treatment, found the general results so favorable that he thought it "not unlikely that modern treatments merely shorten the period of illness and do not produce a greater proportion of discharge than would moral treatment." Bleuler's concept of the groups of schizophrenias placed great emphasis on the naturally occurring range of severity, variability, and reversibility

---

Read at the Second International Congress for Psychiatry, Zurich, Switzerland, September 6, 1957.

\*Assistant Professor of Psychiatry, University of Pennsylvania, Philadelphia, Pa.; Clinical Director, Director of Research, Delaware State Hospital, Farnhurst, Del.

volume xix, number 3, September, 1958 | 195

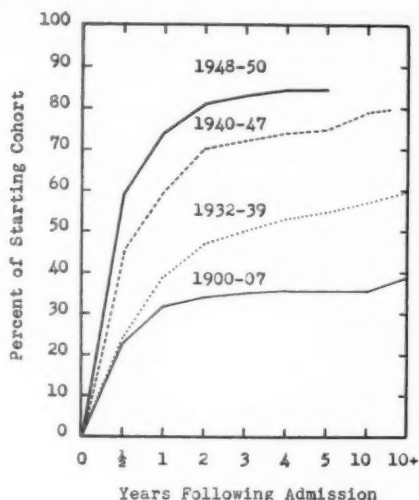
AND QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY

of the manifestations of the illness. Although he did not believe in cure, but referred to "far-reaching improvements," he reported that of a group of 515 cases admitted to the Burghoelzli Hospital between 1898-1905, 60 per cent had remained separated from the hospital and were capable of earning a living, whereas 22 per cent had shown severe and 18 per cent moderate deterioration. I consider it somewhat of a mystery where the idea of schizophrenia as a hopeless disease originated, and I find it even harder to determine how it was, and in some places still is, kept in currency in spite of obvious evidence to the contrary. Only the misconception of schizophrenia as a uniform disease with a rather hopeless prognosis can be blamed for the often astonishing claims of the advocates of all new therapies, somatic or psychological, who attribute every improvement to their therapeutic efforts.

The more naturalistic attitude of psychiatrists of previous generations, but especially of Bleuler who found it "preferable to treat these patients under their usual conditions and within their habitual surroundings," facilitated a higher rate of social recoveries. The scientific outlook of our century produced a puristic concept of cure, aimed at medical and not social recovery. Psychiatrists became determined to eliminate the underlying pathological processes through either somatic or psychological methods of reconstruction of the schizophrenic patient. This had the unfortunate result that patients remained in the hospitals in ever-growing numbers, as long as they continued to show symptoms of the illness. The artificialities of differences in theory and practice make it all too obvious that the status of schizophrenic patients, at the time of the introduction of modern therapies, must be looked upon with some reservations in mind.

I now want to contribute to this discussion some pertinent findings, which are based on a study of 1488 schizophrenic patients who were hospitalized in the Delaware State Hospital in the years 1900 to 1950 and whose status was evaluated as of Jan. 1, 1956. As it happens, this constitutes the total number of hospitalized schizophrenic patients in this small state, which has a population of about 320,000. The Delaware State Hospital is the only psychiatric hospital in the state. This eliminates, for all practical purposes at least, clinical and social factors of selection that usually diminish the significance of findings from a single hospital. The following data represent therefore not only a 50 year sketch of the history of schizophrenic patients in one hospital but also of hospitalized schizophrenic patients from the population of a state. Taking the rate of separations of first admissions as the indication of improvement, we find that separations increased from 38.8 per cent in the beginning of the century to 84 per cent in 1950 (the material was statistically analyzed by the use of the cohort method). Thus, the chances to return to the community rose from four for every 10 to four for every 5 patients. The decisive favorable change occurred after 1940. This coincides with the then rapidly growing use of somatic therapies. As more patients left the hospital, multiple admissions increased accordingly. The chances of readmitted patients for further separations increased from 1 in 10 to 4 in 10. An obvious link between prognostic differentials and favorable responses to treatments is demonstrated by the fact that the curve of separations (table I and fig. 1) rises rapidly within the first six months and flattens to a plateau after two years. This profile has remained unchanged during five decades. The rate of separations within six months after admission increased

FIG. 1. Rate of first separation within specified interval of schizophrenic patients admitted from 1900 through 1950 (current figures as of Jan. 1, 1956).



from 23 to 59 per cent; by the end of two years the rate of separations had increased by only 11 per cent in the beginning of this century but by 22 per cent in the middle of it. The number of further separations within a 10 year period after admission increased slightly after the introduction of psychosurgical treatment.

Some of these findings strongly support Bleuler's concept of groups with differing prognoses. About one third of all patients who left the hospital after their first admission remained continuously separated. This holds true for all five decades and would seem to confirm the existence of a group with a highly favorable prognosis. Conversely, about 30 per cent of all patients included in this study drifted into states of moderate or severe deterioration regardless of the administration of treatment and trial separations. Again this corresponds with Bleuler's observations on the incidence of deterioration.

In the attempt to evaluate the impact of somatic therapies on the course of schizophrenia during the last two decades, we are confronted with many uncertainties. What we call prognoses are retrospective formulations of the actual course of the illness. We did not in the past, and we do not now, possess valid criteria for predictions. Much of the evidence in the literature that has been submitted as proof of a favorable change of the illness has been fragmentary in facts and inadequate in method. Actually there does not seem to be a simple explanation why such a favorable change should be anticipated. We cannot avoid answering the seemingly naive question, "What do somatic therapies treat?" If we abandon the idea of specific effects on alleged specific causes, we have to think of therapeutic procedures as modifiers of selected target symptoms. Seen in this way, electroconvulsive therapy is apt to modify the threatening symptoms of acute catatonia, to disrupt the disturbing preoccupation with paranoid delusions, and to dispel the affective manifestations

TABLE I  
*Schizophrenia\**

Interval of time, years	Years of admission and number in each cohort															
	1900-1907, 129		1908-1915, 130		1916-1923, 180		1924-1931, 245		1932-1939, 275		1940-1947, 313		1948-1950,† 216			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
<i>Retained in Hospital at End of Specified Time</i>																
½	86	66.7	87	66.9	108	60.0	159	64.9	204	74.2	171	54.6	85	39.4		
1	72	55.8	72	55.4	88	48.9	142	58.0	163	59.3	125	40.0	52	24.1		
2	60	46.5	59	45.4	78	43.3	116	47.3	141	51.3	90	28.8	37	17.1		
3	53	41.1	55	42.3	76	42.2	103	42.0	131	47.6	83	26.5	31	14.3		
4	51	39.6	51	39.2	71	39.4	99	40.4	123	44.7	76	24.3	27	12.5		
5	46	35.6	47	36.2	68	37.8	95	38.8	115	41.8	70	22.4	26	12.0		
10	36	27.9	36	27.7	60	33.3	79	32.2	103	37.5	53	16.9				
<i>Released Within Specified Time</i>																
½	30	23.2	33	25.4	67	37.2	84	34.3	67	24.4	141	45.1	128	59.2		
1	41	31.8	42	32.3	86	47.8	100	40.8	107	38.9	187	59.7	160	74.1		
2	44	34.1	45	34.6	93	51.7	124	50.6	129	46.9	219	70.0	175	81.1		
3	45	34.9	46	35.4	94	52.2	131	53.5	138	50.2	226	72.3	179	82.9		
4	46	35.6	47	36.2	98	54.4	133	54.3	146	53.1	231	73.8	183	84.7		
5	46	35.6	48	36.9	100	55.6	136	55.5	151	54.9	234	74.8	183	84.7		
10	46	35.6	52	40.0	106	58.9	149	60.8	158	57.4	248	79.2				
<i>Dying in Hospital Within Specified Time</i>																
½	13	10.1	10	7.7	5	2.8	2	0.8	4	1.4	1	0.3	3	1.4		
1	16	12.4	16	12.3	6	3.3	3	1.2	5	1.8	1	0.3	4	1.8		
2	25	19.4	26	20.0	9	5.0	5	2.1	5	1.8	4	1.2	4	1.8		
3	31	24.0	29	22.3	10	5.6	11	4.5	6	2.2	4	1.2	6	2.8		
4	32	24.8	32	24.6	11	6.2	13	5.3	6	2.2	6	1.9	6	2.8		
5	37	28.8	35	26.9	12	6.6	14	5.7	9	3.3	9	2.8	7	3.3		
10	47	36.5	42	32.3	14	7.8	17	7.0	14	5.1	12	3.9				

\* Per cent of first admissions retained continuously in hospital, separated, and dead within specified intervals of time following admission; Delaware State Hospital, 1900-1950; both sexes; all ages.

† Cohort of 1948-1950 contains only three years, permitting a minimum of five years' follow-up.

of panic and turbulence. It would be erroneous, however, to draw generalizing conclusions with regard to the effects of the treatment on the general course of schizophrenia. Similarly, some time had to elapse before it became generally evident that psychosurgical treatments, if they were to be effective, had to be selected on the basis of affective symptoms instead of being used as a so-called last resort in the management of chronic psychoses. Why indeed, we wonder, should "chronicity" be made into a therapeutic target, since there are as many discrepant behavioral variations in chronic as in acute patients? Does it appear clinically realistic to expect a withdrawn, suspicious, and ill-nourished patient to

respond to the same treatment and in the same manner as an aggressive and overactive patient in robust physical condition because both share the diagnosis of paranoid schizophrenia? Psychopharmacological therapies with neuroleptic drugs have added the most persuasive proof that it is necessary to dissociate target symptoms from diagnostic entities. Neuroleptic drugs, through their inhibitory action on psychomotor functions, are singularly effective in reducing excitement and abnormal affective tension; they are, by virtue of this action, useless and even harmful in the treatment of patients with already diminished resources of energy and with affective retardation. Yet there is every indication in the current literature that the same drug is administered to the dull and apathetic as well as to the disturbed and agitated catatonic patient, since treatment is still directed at an entity, catatonia, regardless of drastic differences in the symptomatology. The illusion of a schizophrenia-centered therapy will not die easily.

Does this reduce somatic therapies to—what is often condescendingly called—purely symptomatic procedures? The successful modification of symptoms that are threats to a patient's psychobiological homeostasis is not necessarily a temporary measure, followed by a return to the previous state, but is often the prerequisite for, and the beginning of, the process of recovery. Little credit has been given to the fact that somatic therapies have greatly reduced the early incidence of death in schizophrenia. In the analysis of the death rates of the 1488 hospitalized patients in Delaware, death, within the 10 year period following admission, decreased from an initial 36 per cent in the beginning of the century to approximately 3 per cent in the most recent period. Schizophrenia has, of course, rarely been considered as a primary cause of death, but to make easy distinctions between primary and secondary causes may be more of a logical exercise on cause and consequence than a contribution to clinical realism. The development of effective treatment methods has proved beyond doubt that patients need not die of the biological consequences of psychotic behavior. The accomplished preservation of life must therefore be considered as an actual improvement in the over-all course of schizophrenia.

To sum up what has been stated so far, it appears that somatic treatments have immensely activated the movements of schizophrenic patients, improved the chances of separation, and reduced mortality. A direct influence on the prognoses cannot be ascertained in view of insufficient knowledge about the natural history of schizophrenia. What we have at best is circumstantial evidence of favorable changes in the actual, but not necessarily natural, courses of schizophrenia as they were known in the earlier decades of this century.

We need not hesitate to affirm, however, that there have been profound changes in the clinical profile. The schizophrenic patient of today is no longer the same bizarre person as that described in the textbooks of yesterday. Cataleptic stupors, stereotypical motor peculiarities, grandiose excitement, and violent behavior have substantially yielded to therapeutic measures. Perhaps it is justified to point out a similarity of developments in the manifestations of hysteria and schizophrenia. The strikingly exhibitionistic elements of both, which were so apparent at the turn of the century, seem to have faded into the background. To demonstrate to students a somnambulant or cataleptic patient has become as difficult as to present a case of dementia paralytica.

The speedy interruption of acute disturbances has not only reduced the length of hospitalization but profoundly changed the psychological pattern of adaptation. Somatic therapies, when effective, shorten the patient's experiential exposure to psychotic ideation. They thereby often remove the obstacles to a social existence. The therapeutically induced blurring or elimination of psychotic experiencing protects the patient from surrendering to unreality, which, in the past, by the very fact of prolonged existence, contributed toward affective deterioration.

In accordance with available evidence, there is a group with a favorable as well as one with an unfavorable prognosis. Somatic treatments have neither produced the former nor eliminated the latter. But there remain the patients of intermediate groups with varying prognostic potentialities whose fate depends on therapeutic intervention. In this area, an area of unknown magnitude, somatic treatments have exerted marked effects on psychopathological manifestations that blocked the path toward social normalization.

A final observation: Eugen Bleuler's concept of the group of schizophrenias has long been acknowledged. The implications, however, have by and large been ignored. Today we still refer to schizophrenia, or for that matter to the schizophrenic patient, as a uniform object of treatment and research. To apply the group concept to clinical and investigative methods may well turn out to be the decisive step toward the advancement of our knowledge.

## RESUMEN

Una evaluación del curso y resultados en la esquizofrenia, basada en un estudio de 1488 pacientes esquizofrénicos, hospitalizados en los años de 1900 a 1950, sugirió las conclusiones siguientes: El número de pacientes dados de alta en los hospitales, aumentó del 38,8 por ciento a comienzos del siglo al 84 por ciento en 1950. El decisivo cambio favorable comenzó después de 1940. Esta fecha coincide con la de la introducción de las terapias somáticas. Los tratamientos somáticos han activado extraordinariamente la movilización social de los pacientes esquizofrénicos, mejoraron las oportunidades de dar de alta a los enfermos y redujeron la mortalidad. No obstante, parece dudosa su influencia directa sobre el pronóstico. Existieron cambios profundos en los perfiles psicopatológicos. El paciente esquizofrénico de hoy, difiere en numerosos aspectos del paciente esquizofrénico de ayer.

## RESUME

Une évaluation de la marche et du dénouement de la schizophrénie, basée sur l'étude de 1.488 schizophrènes hospitalisés au cours des années 1900 à 1950, permet de conclure que la proportion des malades autorisés à quitter l'hôpital est montée de 38.8 pour cent au début du siècle à 84 pour cent en 1950. Le changement favorable s'est produit d'une façon décisive en 1940. Cette date coïncide avec l'introduction des thérapeutiques somatiques. Les traitements somatiques ont activé d'une manière considérable la mobilité sociale des schizophrènes; ils ont également augmenté les chances de sortie de l'hôpital et réduit la mortalité. Une influence directe sur le pronostic paraît néanmoins douteuse. De profonds

changements se sont produits dans les configurations psychopathologiques. Le schizophrène d'aujourd'hui diffère sous beaucoup d'aspects du schizophrène d'hier.

#### REFERENCES

1. BLEULER, E.: *Dementia Praecox or the Group of Schizophrenias*, New York, International Universities Press, 1950.
2. BOCKOVEN, J. S.: Moral treatment in American psychiatry, *J. Nerv. & Ment. Dis.* 124(3):292, 1956.
3. FREYHAN, F. A.: Course and outcome of schizophrenia, *Am. J. Psychiat.* 112(3):161, Sept., 1955.
4. FREYHAN, F. A.: Eugen Bleuler's concept of the group of schizophrenias at mid-century, *Am. J. Psychiat.* 114(9):769, March, 1958.

#### Institute on Chronic Schizophrenia

The Osawatomie State Hospital, Osawatomie, Kansas (George Zubowicz, M. D., Superintendent), announces a special meeting entitled Institute on Chronic Schizophrenia and Hospital Treatment Programs on October 1, 2, 3, 1958, supported by a grant from the National Institute of Mental Health, Bethesda, Md., and Smith, Kline & French Laboratories, Philadelphia. The purpose of the meeting is to define specific practical treatments of chronic schizophrenia for mental hospitals, to promote new ideas and research activity, and to debate, discuss, and clarify divergent points of view on schizophrenia. There will be formal presentations in regard to psychoanalytic ideas, communication theory, the viewpoint of social psychiatry, "intrusion" theory, the biological standpoint, and large-scale hospital programing. There will also be individual and panel discussions.

Many outstanding psychiatrists, psychologists, and other behavioral scientists will participate in the program. Some of these are: Dr. Karl Menninger, Dr. N. Apter, Mr. Gregory Bateson, Dr. John Cumming, Dr. Austin Des Lauriers, Dr. Jordan Scher, Dr. Otto Will, Jr., Dr. Bruno Minz, Dr. L. von Bertalanffy, Dr. H. G. van der Waal, Dr. I. Clancey, Dr. Elmer Galioni, Dr. S. K. Weinberg, and Dr. Martin Scheerer.



# The Personality Reaction to Adrenalin and Histamine

Edwin O. Niver, M. D.

CLEVELAND, OHIO

There may be some question as to why one should be interested in the personality reaction to adrenalin and histamine at this time. The answer is bound up with the fact that we are beginning to appreciate the brain in terms of interacting functions of alerting, inhibiting, and impulse formation, rather than as a unit, and that these substances have a large role in one of them. In spite of the fact that for some time we have had the sedatives specifically to reduce inhibition, it was the demonstration of the control of the alerting mechanism by the ataraxics that began the trend. In this discussion, our interest centers on adrenalin and histamine because of their effect on the third function, namely, impulse formation.

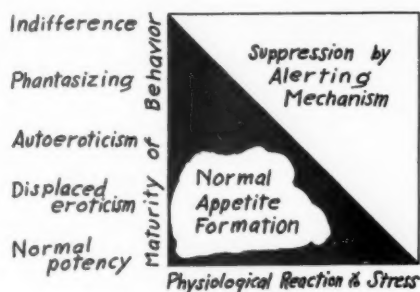
The association of adrenalin with the emotions was first noted by Cannon<sup>1</sup> in his paper on fear, hunger, and rage. In spite of the fact that his idea proved so fascinating that adrenalin became known as the "hormone of courage," its purely psychological effects came to be viewed with skepticism. Histamine, which as we shall see later has many of the attributes of the "hormone of reality," was first introduced into the psychiatric field by Marshall<sup>2</sup> in connection with a rather dubious theory of psychological desensitization. Subsequently, the place of histamine both therapeutically and in its endocrine interrelationships was studied by Sackler et al.<sup>3</sup> The widespread publicization of Horton's use of the substance in cephalalgia<sup>4</sup> brought it to the author's attention, since many of his patients claimed benefits from it when given it by their family physicians. At the time, the author was searching for a substance with some of the endocrine and insight-producing properties<sup>5</sup> of insulin hypoglycemia and suspected that histamine might be suitable. The soothing effects of the drug in excitement and states of disturbed instinctual feeling were reported.<sup>6</sup> However, the problem of exactly how to use histamine remained unsolved, so that in general the results obtained remained an enigma. Nonetheless, over the years it appeared that there was a significance to observations made in individual cases that could lead to a solution. In order to develop this, it proved necessary to go back to Cannon's original theory and picture adrenalin as raising impulsive drive through sympathetic effects, so that the opposite type of reactions to histamine could be understood. This conception does not postulate a direct antagonism, but rather one due to the secondary effects of these reactions on hypothalamic and endocrine mechanisms<sup>7</sup> of appetite formation.

## TECHNIQUE

Most of this study was done in the course of routine office treatment during the last 10 years. The drugs were not always administered in the same way, and, at other times, other medications were given to stabilize the patient. However, as distinct from the methods



FIG. 1. Aggressive or regressive behavior in terms of appetite.



of most other workers, the aim was a brief, moderately severe reaction, which was fully exploited from a psychotherapeutic angle. Eventually, the following methods were found to be the most satisfactory: 0.5 ml. of a 1:10,000 solution of adrenalin was given, quickly, intravenously, the idea being to stimulate the impulse level without involving the alerting mechanism through unpleasant effect, or prolonged action. Fourteen milligrams of histamine acid phosphate in 0.5 ml. of water was given in a similar fashion, but slowly, over a period of one minute. In both cases, the patient sat upright. The interval varied from three times a week to once a week, with no set number of injections, the pattern of treatment being similar to that of electroconvulsive therapy. The adrenalin reaction begins with a gray pallor and ends with a relaxed, warm flush. With histamine, a blue flush is followed shortly by a gray pallor about the mouth and other symptoms of adrenal reaction.

In this study, there was no formal experiment design. It is a series of observations on the personality functions dependent on effective appetite formation, or, in other words, potency in individual patients. Figure 1 was developed as a way of overcoming the uniqueness inherent in this type of data. The vertical dimension starts with normal potency and goes in the direction of indifference. Since it is believed that knowing what one wants determines insight and maturity of behavior, this scale offers a means of interpreting aggressive or regressive behavior in terms of appetite. However, since these drugs act through mechanisms that are affected by stress, it is necessary to think in terms of area, rather than on a straight line basis. That is, a horizontal dimension is required because of the commonly experienced deleterious effect of anxiety and strain on appetite. It is recorded as physiological reaction to stress. In the area shown, a line is drawn from the point of extreme regression to extreme stress, to mark off that portion of it on which the drugs have no observable effects. It also suggests that, in certain situations, these drugs could tend to push the patient into an unreactive condition. It is believed that this explains the equivocal results obtained in some previous studies.<sup>8, 9</sup>

In considering the cases, the frequent references to sexual morbidity are necessary because it is often the most manifest form of disturbed impulse formation. We shall begin by showing the effects of adrenalin reactions in restoring appetite and enhancing motivation. The patients presented represent only a small number of those studied.

## CASE HISTORIES

*Case 1.* The patient was a conscientious, overresponsible woman of 44 years, not mature enough to marry a man who represented more than a child to her. She broke down as the result of disturbed feelings, attributed to having two children late in life, at a time when her husband was drifting into alcoholism. Her illness was classified as a schizophrenic reaction, paranoid type, with asthenia and hypochondriacal symptoms predominating. She relapsed on two different occasions, following electroconvulsive therapy, and she was then put on adrenalin therapy once weekly. She immediately regained her appetite, strength, and confidence, which enabled her to do her work and somewhat stabilize her dependent husband. However, her dependence on adrenalin amounted to an addiction. Whenever she was taken off the drug, she would go to bed, develop nausea and anorexia, and give up. This is an example of how the effects of stress can be combated by adrenalin.

*Case 2.* The patient was a large, lusty, 70 year old man whose wife was a chronic invalid being cared for by the daughter. The daughter had little patience with her father, and gradually he became irritable, restless, moody, and unable to apply himself to any of his usual activities. During the interview, he complained of impotence. One rather severe adrenalin reaction profoundly affected him. It appeared to restore his motivation, and his effectiveness was restored for nearly one year. No intimacy with the opposite sex was involved. At the end of this time he was seen again and responded in a similar fashion to a second injection. This shows how a small amount of adrenalin can restore the impulse mechanism in a normally mature person.

*Case 3.* After being married for the first time at the age of 50 years, this rather boyish patient was obviously discouraged. In fact, he explained that he had been a playboy all his life and was shocked to find himself impotent with his wife. He had always enjoyed hard work but now he seemed to lack energy, and it appeared that his wife's encouraging him to take things easy only made the situation worse. Several injections of adrenalin temporarily restored his potency. However, he reacted by immediately seeking another woman and became involved in anxieties that caused him to relapse into a state in which there was no response to adrenalin. This case represents the response of an immature type to adrenalin.

*Case 4.* A 24 year old boy, with a tendency to conversion symptoms, could not face the prospect of separating himself from his matriarchal peasant mother. When his friend wanted him to be best man at his wedding, he became agitated and complained of violent headaches, pains in the chest, and other somatic symptoms. He could not go anywhere alone and avoided driving a car or any other activity that might lead to independency or contact with the opposite sex, even though, on occasion, he could put up a good front and be the life of the party. Several times when he could not be brought to face an issue he was given adrenalin. Once he developed an acute backache. Usually, however, he would state that he felt relieved and would report on the next interview that he had been able to meet situations better. During one interview, he was deliberately made angry, with the same result. This patient represents an even less mature type than the patient in case 3 and again suggests that adrenalin by injection, or released by rage, facilitates the proper assumption of responsibility by the ego.

The cases just presented have suggested the positive action of adrenalin in the mechanism of appetite and impulse formation. The opposite action of histamine, which we are about to consider, must, in many ways, appear negative. Histamine appears to be produced by all tissues of the body whenever they are brought into contact with the harshness of reality, whether it be through a strange chemical, injury, or fatigue. Moreover, its action appears to enhance the effect of these deleterious experiences. Thus, it supports allergy, delays healing,<sup>10</sup> and prolongs fatigue into a chronic lassitude that fosters passive and regressive attitudes. Although the last point is what we wish to demonstrate, let us keep in mind that, in all probability, histamine is a positive regulator of bodily reaction, a sort of hormone of reality, which can be therapeutically useful in the unreal situations of distorted bodily feeling.

*Case 5.* This patient was a 25 year old mother of a month old child. When first seen, she was in an inaccessible catatonic state of several days' duration. She was given twice the usual dose of histamine and responded with a period in which she could tell the story of incestuous relations with her father, with normal affect. Her condition was interpreted as a state of distorted eroticism that appears to have been a defensive escape. The histamine caused a return of normal feeling, but, deprived of her defense, she rapidly regressed, refused food, and became inaccessible. She did not respond to further histamine. If we will look at our diagram, we can see why. She had drifted into an area in which this type of drug could no longer reach her.

*Case 6.* This patient was a 37 year old chronic schizophrenic woman who had been in a passive, tractable state and now was showing acute symptoms for the second time. In addition to her mental disturbance, she had arthritis, which had twice required the intervention of an orthopedist. On the first occasion, she had had an acute infatuation for him and then regressed. This time, following a corrective operation on her arthritic deformity, she again hallucinated the doctor's voice and then passed into a state of excitement in which she fancied herself to be pregnant by divine intervention. In her mind, the doctor was obviously a father surrogate, and her phantasy was a substitution for incest. Following histamine therapy, she again regressed into a state of dependency in which she relived the mother and child relationship. Since she was more tractable in this condition, the family considered the treatment a success.

*Case 7.* This 26 year old hebephrenic woman was in a state of excitement, colored by silly neologistic hallucinations of amorous nature. Extensive electroconvulsive therapy had not produced much effect. She was given histamine by the intravenous drip method over a two week period. Under this therapy, her hallucinations faded and she told the story of incestuous relations with a half-brother as a child. Since her husband had also been a childhood playmate, her feeling for him was somehow entangled with the guilt of her past. The appreciation of reality that histamine gave her was therefore disturbing and only opened the way for an indolent, apathetic withdrawal. An adrenalin reaction was given in an attempt to reverse this trend. Immediately she became anxious and then excited, imagining that she was having intimacies with a Hollywood movie actor. This was much like her symptoms on admission except that she seemed more alert and her thinking was comprehensible. However, she had passed into an area of stress where further histamine did not reach her.

*Case 8.* This patient was a schizophrenic farmer of 30 years who utilized eroticism as an escape from anxiety. However, each time a child was born he would break down and have to have a course of electroconvulsive therapy. About two weeks subsequent to his last treatment, it was felt that his anxiety was again driving him toward eroticism and he was given histamine. Immediately the patient slumped into an indolent, though normally extraverted, state. The wife reported that the histamine had taken away all his passionate feelings. It was several weeks before he again began to show a normal interest in sex. Thus, though superficially, it might appear good to control erotic tendencies, one must keep in mind that the positive forces needed for adjustment are bound up with it.

*Case 9.* This could be any number of schizophrenic boys who were given histamine to stop masturbation, with the idea that the habit increased their isolation and, if they could avoid it, they would be in a better position to face their difficulty. The histamine had the desired effect, but it had a negative effect on their self-confidence so that they usually regressed and became increasingly ill. In this connection, it is interesting to recall that when Sir Henry Dale came upon histamine in the aqueous extracts of ergot, he reported that, in addition to having a tonic effect on smooth muscle, it reduced the circulation in the genital region.

This concludes the review of cases presented, primarily, to demonstrate the psychological implications of the histamine reaction.

#### DISCUSSION

If one goes back to the introduction, he will remember that the basic purpose of this study was to find an agent that could be applied simply with the insight-producing properties

of insulin hypoglycemia. For reasons outlined there, the action of adrenalin and histamine on appetite mechanisms has been reported in the form of observable psychological effects, with the implication that maturity of behavior and insight were dependent on the kind of healthy appetite that leaves no doubt as to what the individual wants. The consideration of this material has been complicated by the action of the alerting mechanism in depressing appetite, and, in order to illuminate this relationship, a diagram has been presented (fig. 1). This shows the drugs being studied to be effective only in the lower left half of their possible area of operation because of the afore-mentioned mechanism in response to stress.

In order to understand why such a diagram was arrived at, we must visualize cerebral activity in terms of three basic mechanisms, namely, alerting, inhibiting, and impulse forming. Our diagram brings out the fact that there is a reciprocal relationship in the way the alerting and impulse-forming mechanisms interact with the inhibiting mechanism. That is, the inhibiting mechanism, ordinarily spoken of as the cerebral cortex, has the job of saying "No" to impulses of appetite until either the time is appropriate or the urgency is so great that it cannot be denied. The job of the alerting mechanism is to warn of dangers and enhance the inhibiting effect,<sup>11</sup> and that of the impulse-forming mechanism is to release it by altering the impulse pressure.

The relation of the impulse mechanism to insight appears to be that of a key that can unlock latent tensions acquired during overactivity of the alerting mechanism. It seems unreasonable to expect that even a complete suppression of alerting activity would basically alter a patient's attitude once the drugs have been withdrawn. In some way, an element of positive motivation must be introduced, otherwise the patients tend to relapse into their old defensive patterns. This may come through adding zest to appetite or through the increased capacity to tolerate the pleasure of excitement that is a part of a more stable feeling toward reality. Though these reactions appear to be results from adrenalin and histamine, both drugs so profoundly stimulate endocrine and sympathetic mechanisms as to be a source of stress in themselves. An example of this is the dumping action of histamine on the adrenal, which is used as a test for pheochromocytoma.<sup>12</sup> Therefore modulation of the appetite mechanism by them cannot be usefully accomplished without reducing the alerting reaction, as resulted from the sedative phase of insulin hypoglycemia. Thus one must come back to the use of the ataraxics. We are well aware of the difficulties of utilizing ataractic drugs in full dosage, and since there is some danger of shock, especially with histamine, it has not been possible to set up a definitive experiment. At this stage of progress, the most promising technique appears to be that of omitting the ataraxic for six hours before treatment, as is done with convulsive therapy, and substituting a barbiturate, such as amobarbital sodium.

Finally, let us emphasize that this study was not aimed at demonstrating therapeutic results. The purpose has been rather to develop knowledge of our tools. Therefore, largely phlegmatic patients were used instead of the type we hope will eventually benefit.

#### CONCLUSIONS

Nine cases have been described to show the action of adrenalin and histamine reactions in modulating appetite mechanisms. In the course of the study, it was found that, where

the alerting mechanism is chronically overactive, these drugs are not useful. Since it appears that modulation of the impulse may be a key to material fixed by the inhibitive mechanism under stress, it is suggested that this procedure may be facilitated by the use of ataraxics.

## RESUMEN

En este trabajo se describen 9 casos para mostrar la acción de las reacciones que produce la adrenalina y la histamina sobre los mecanismos que regulan el apetito. A través del estudio se halló que en los casos en que el mecanismo de alarma está crónicamente superactivo, estas drogas no son útiles. Como parece que la regulación del impulso puede ser una llave para la substancia fijada por el mecanismo inhibitor en situaciones de stress, se sugiere que este procedimiento puede ser facilitado por el uso de los atarácicos.

## RESUME

Neuf cas ont été décrits ici pour montrer l'action de l'adrénaline et les réactions de l'histamine dans la modulation du mécanisme de l'appétit. Au cours de l'étude, il a été observé que, lorsque le mécanisme stimulateur est chroniquement hyperactif, ces remèdes sont sans utilité. Puisqu'il apparaît que la modulation de l'impulsion peut être le facteur décisif pour la fixation de matériel par le mécanisme d'inhibition en état de stress, il est suggéré que ce processus soit facilité par l'emploi d'ataraxiques.

## REFERENCES

1. CANNON, W. B.: Bodily Changes in Pain, Hunger, Fear, and Rage, ed. 2, New York, Appleton, 1929.
2. MARSHALL, W.: Histamine phosphate in manic-depressive psychosis, *Clin. Med. & Surg.* 45:57, Feb., 1938.
3. SACKLER, A. M.; SACKLER, M. D., AND SACKLER, R. R., in consultation with VAN OPHUIJSEN, J. A. W.: Non-convulsive bio-chemotherapy with histamine, *J. Nerv. & Ment. Dis.* 110:149, Aug., 1949.
4. HORTON, B. T.: The use of histamine in the treatment of specific types of headaches, *J. A. M. A.* 116: 377, Feb. 1, 1941.
5. BYCHOWSKI, G.: Psychotherapy of Psychosis, New York, Grune & Stratton, 1952, p. 180.
6. NIVER, E. O.: The use of histamine in preparing patients for psychotherapy, *Psychiatric Quart.* 22:729, Oct., 1948.
7. BLISS, E. L., ET AL: Adrenalin as an activator of adrenal cortex, *J. Clin. Endocrinol.* 11:46, 1951.
8. CAMERON, E.: Behaviorial changes produced in patients suffering from chronic tensional anxiety states by long-continued adrenalin administration, *Psychiatric Quart.* 21:261-273, April, 1947.
9. BASOWITZ, H.; KORCHIN, S. J.; IKEN, D.; GOLDSTEIN, M. S., AND GUSSACK, H.: Anxiety and performance changes with a minimal dose of epinephrine, *A.M.A. Arch. Neurol. & Psychiat.* 76:98-105, July, 1956.
10. BALDRIDGE, O. L., JR.: Effects of antihistamine pyrrbutamine on soft tissue wound healing, *J. Oral Surg.* 13:183, July, 1955.
11. JEANS, R. F., AND TOMAN, J. E. P.: Anxiety and cerebral excitability, *A.M.A. Arch. Neurol. & Psychiat.* 75:534-547, May, 1956.

# An Analysis of Homicide-Suicide\*

Marvin E. Wolfgang, Ph.D.†

PHILADELPHIA, PA.

Individually, criminal homicide and suicide have been extensively studied and intensively analyzed. Annual rates of homicide have been compared to rates of suicide, and the various disciplines from sociology, psychology, and psychiatry have commented upon the general inverse relationship of the two separate acts of violence. However, there is a paucity of information and an almost total absence of empirical data about the dual act of homicide and suicide committed by the same person. The present study is concerned with just this last type of phenomenon and analyzes a series of homicide-suicides relative to important sociopsychological variables. Several patterns of behavior are noted, some basic psychoanalytic assumptions are empirically tested, and suggested hypotheses are presented.

In the literature, Tarde<sup>1</sup> and Durkheim<sup>2</sup> in France, Ferri<sup>3</sup> in Italy, Verkko<sup>4</sup> in Finland and Sweden, Dublin and Bunzel,<sup>5</sup> Porterfield and Talbert,<sup>6</sup> and Schmid<sup>7</sup> in the United States, and others have examined homicide and suicide as separate acts but have not analyzed homicide slayers who kill themselves. Like those before them, Porterfield and Talbert compared the ratios and indices of deaths from suicide and homicide, and on the basis of a study of 86 cities concluded that these death causes were "opposite types of adjustment."<sup>6</sup>

There is a plethora of psychological and psychoanalytical studies of suicide alone, and a review of these would go beyond even the periphery of the present study concerned with both homicide and suicide. Suffice it to say that Raven,<sup>8</sup> for example, speaks of both murder and suicide as marks of an abnormal mind. Lehrman,<sup>9</sup> Menninger,<sup>10</sup> Schilder,<sup>11</sup> Zilboorg,<sup>12</sup> and Bromberg<sup>13</sup> are a few authors who have described the similar underlying and often unconscious motivations of suicide and homicide. Bromberg, for example, believes that "the victim often represents the murderer in the latter's unconscious," and that "analytic interpretation of suicide and murder leads to the 'paradoxical formulation' that in terms of the unconscious system 'murder is suicide and suicide is murder.'"<sup>13</sup> Sometimes "murder is seen as bizarre forms of attempted suicide,"<sup>14</sup> and in other cases "suicide is murder; desire to kill turned on self."<sup>15</sup>

## THE PRESENT STUDY: METHODOLOGY AND RATES

The present study is part of a larger work that includes analysis of 588 consecutive criminal homicides recorded by the Homicide Squad of the Philadelphia Police Department between Jan. 1, 1948, and Dec. 31, 1952. All told, there were 621 offenders and 588 victims; the number of offenders being larger than that of victims because in several cases more than one person was responsible for one homicide.

Among the 621 persons who were charged with having committed criminal homicide, 24,

\* This study is part of a larger work on patterns in criminal homicide published by the University of Pennsylvania Press.

† Department of Sociology, Dietrich Hall, W-83, University of Pennsylvania, Philadelphia 4.



or about 4 per cent, later killed themselves. Comparison is frequently made therefore between "simple" homicide offenders and those who also committed suicide. In order to safeguard against loose generalizations, the chi square test of significance has been used wherever cell size of the variables being tested permitted such treatment. The conventional use of a *P* value of less than 0.05, or the 5 per cent level of significance, has been employed as the limit of statistically significant association. When the term "significant" is used throughout these descriptions, therefore, the reader may assume that a test of association has been made and that a chi square with *P* less than 0.05 has been found.

Of the 24 homicide-suicides, 11 were Negro men, 11 were white men, 1 was a Negro woman, and 1 a white woman. Relative to the racial composition of homicide offenders in general, whites make up a larger proportion of homicide-suicides. Although whites only made up one fourth of all homicide offenders, it is significant that they comprised half of the homicide-suicides. It may be true of homicide-suicide, as well of the two phenomena separately, that a higher-status group commits suicide with greater frequency than a lower-status group.

Whites in Philadelphia have a more rigid class structure than do Negroes and less frequently violate the prevailing mores and laws. This fact, combined with the observed race differentials in homicide-suicide, coincides with the conclusion of Straus and Straus that "the suicide rate will vary directly . . . with the degree to which a society is closely structured."<sup>16</sup> These statements recall a theoretical affinity to the writings of others,<sup>2, 7, 23</sup> who agree that one of the major factors in the differential incidences of suicide among people of varying ethnic and other types of groups is to be found in the degree of the "group solidarity," "anomie," or "psycho-social isolation." Finally, in terms of Porterfield's "folk-secular continuum," if the Negroes in Philadelphia correspond closely to the "depressed folk society" and whites to the "secular society," then the author's contention that the former is more likely to find justification in his mores for crimes such as homicide is of theoretical value in understanding race differences in homicide-suicide.<sup>17</sup>

In Philadelphia, men comprise 83 per cent of all homicide offenders, but, significantly, they make up as many as 22 of the 24 homicide-suicides. This higher proportion of men in homicide-suicides shows agreement with Durkheim's comments that "woman kills herself less, and she kills others less, not because of physiological differences from man but because she does not participate in collective life in the same way."<sup>2</sup>

The median age of those who committed suicide after homicide (38.3 years) is about 7 years older than that for all homicide offenders (31.9 years). On the other hand, the median age of victims of the homicide-suicide group (30.1 years) is about 5 years younger than that for all victims of homicide in general (35.1 years). None of the homicide-suicide offenders is less than 25 years of age, but 6 of the victims are less than this age. (A detailed discussion of these age differentials appears in the larger work previously mentioned.)

#### PHILADELPHIA RATES COMPARED WITH OTHER STUDIES

The proportion of homicide-suicide cases among total homicide offenders appears to be consistently low in this country. In Philadelphia, only about 4 out of every 100 who commit

criminal homicide kill themselves. Dublin and Bunzel<sup>5</sup> found that, in 611 cases of homicide, 9 per cent of the slayers committed suicide. Of 763 persons implicated in 739 homicides occurring in Atlanta, Birmingham, Memphis, and New Orleans during 1921 to 1922, 2 per cent of the offenders committed suicide.<sup>18</sup> This proportion does not coincide with Porterfield's belief that such cases are more frequent in the South than in the North. Of the 760 homicides in Cook County, Ill., during 1926 to 1927, 4 per cent of the assailants killed themselves—a percentage similar to that in Philadelphia. Also, as in Philadelphia, most of the 31 were white suicides, for only 6 were nonwhite and 25 were white.<sup>19</sup> In Minneapolis, Schmid<sup>7</sup> noted that only 3 out of 375 persons who committed suicide between 1928 and 1932 did so after homicide; and, among the 318 persons who received original death sentences in Pennsylvania between 1918 and 1939, only 2 committed suicide.<sup>20</sup>

In England, however, homicide-suicide cases comprise a much larger proportion of offenders. From 1900 through 1949 in England and Wales, there were 7454 murders known to the police. Suspects of these murders who committed suicide numbered 1674, or 22 per cent. Excluding those cases involving victims less than 1 year of age, 31 per cent of the murder suspects committed suicide. There were 2834 persons arrested for murder during this period, and the ratio of persons arrested to those suspects who committed suicide was only 1.7 to 1.<sup>21</sup>

In 1950 the police reported 122 persons, aged 1 year or more, murdered in England and Wales. Although in 3 of these cases nobody could be detected as the possible perpetrators, the police suspected 109 persons to be responsible for the 119 murder cases. Of these, 35 per cent committed suicide.<sup>22</sup> For the same year (1950), the police reported 117 criminal homicides in Philadelphia. In 11 of these, the perpetrators escaped detection and apprehension, and 7 persons were multiple defendants in addition to the first defendant. All told, 113 suspects were arrested in Philadelphia, of whom only 3 committed suicide. The higher proportion of homicide-suicides in England is obvious.

#### PATTERNS OF HOMICIDE-SUICIDE IN THE PHILADELPHIA STUDY

Although there were 24 offenders in Philadelphia who committed suicide, they killed 26 persons. The difference is accounted for by 2 double homicides. (A double homicide is one in which 2 persons are killed by the same slayer at the same time and place or within a very short period of time.) In most cases the offender killed himself shortly after having slain his victim. Whether he committed suicide out of remorse, fear of punishment, or some other motive is difficult to determine. Probably Cavan's belief, that in the majority of cases the murder and suicide seem part of the same act, is correct. She points out that the person interprets his difficulty as sufficient to prohibit adjustment; he has, he believes, reached the end of the way, and suicide is a means of solution for him. However, his happiness has been ruined or is prevented by some person. Before he kills himself he kills that person, in anger and revenge, or in jealousy and to prevent another from succeeding where he has failed. If the suicide occurs at a later period than the homicide, remorse or fear has probably been the reason. If the suicide occurs immediately after the homicide, or within a relatively short time thereafter, either both deaths were impulsive or both premeditated.<sup>23</sup>



Probably the suicide that follows homicide is motivationally closely allied with the criminal slaying, but when two events are separated in time a secondary motive intervenes. In Philadelphia, in 18 cases out of the 24 the offender killed himself immediately after, and at the scene of, the homicide; in 3 cases he committed suicide later in the county prison; and in 3 the suicide was committed elsewhere.

Only superficial motives for killing the 26 victims were recorded by the police. These include: family quarrel (10), jealousy (6), revenge (3), accidental (1), altercation (1), ill health (1), unknown (4). Methods by which these victims of homicide met death were: shooting (15), stabbing (6), asphyxiation by gas (2), strangulation (1), beating (1), poisoning (1). The offender killed himself by shooting (10), jumping from a bridge (3), asphyxiation by gas (3), stabbing (2), slashing of throat or wrists (2), hanging (2), and poisoning (2).

All criminal homicide implies that some kind of violence has been employed and that the death was not a natural one. However, some slayers kill their victims with one shot, stab, or blow; whereas other offenders kill brutally and much more violently. It may be a purely arbitrary and statistical artifact to attempt to draw quantitatively a line between violent and nonviolent homicide, but the study by Berg and Fox<sup>24</sup> provides some useful insight into this problem. These authors, like the present one, consider two or more acts of stabbing, cutting, or shooting, involved in the process of slaying a victim, as violent homicide. If a severe beating is the method by which the victim met death, it too may be classified among violent homicides, although determination of a severe beating is probably a more subjective evaluation by the researcher. If more than five acts were involved in the death, the slaying may properly be labeled "excessive violence."

According to this definition of violence, 20 of these 26 victims were killed violently: 3 by two acts, 6 by three to five acts, 10 by more than five acts, and 1 by severe beating. All 6 of the victims of nonviolence were whites. It appears that these homicides were proportionately and significantly more violent than homicides in general. Of all homicides, just half of the victims were killed violently; whereas among homicide-suicides three-quarters met death violently, and half were killed with extraordinary violence (more than five acts).

So intensely did the offender feel about the events and persons involved in the circumstances surrounding the slaying that he apparently responded in equally intense proportions by violently assaulting the object whom he defined as obstructing satisfaction of his goals. In most of these cases, as mentioned later, the relationship between the homicide-suicide offender and his victim was intimate, characterized by strong emotional attachment, and maintained over a long period of time. The frustration-aggression thesis seems most appropriate as a partial explanation for these cases, which result in higher frequency of violent and very violent slayings.

It may be contended further that so strongly felt was the offender's frustration that a single assaultive act—or even a series of assaultive acts—against another person was not sufficient to alleviate his aggressive impulse or reactions; and, when the external object contributing to frustration (the victim) was eliminated, he turned inward—to self—as the only additional outlet for his remaining aggression. Such an explanation assumes a certain amount of reserve aggression energy, which, upon finding an outlet, seeks to expend itself entirely at one time,

and if all such energy is not released by killing another, the bearer of such energy—namely, self—is eliminated. If, however, all aggression energy is vented on the victim, we must posit a feeling of remorse, guilt, or fear after the slaying to account for newly created frustration and aggression energy that results in self-destruction.

The guilt hypothesis suggests that, following his killing of another person, the individual may suffer such a threat to his self-esteem that he feels the only way to demonstrate the hatred society should inflict upon him is to kill himself. Suicide thus becomes a means of showing his agreement with the social norms that he has long ago internalized. Moreover, in acting suicidally this individual not only turns against himself a violent reaction to continued frustration, but also he may attempt, consciously or unconsciously, to control his environment by stimulating sympathy and even guilt in other people. The question may legitimately be asked why these individuals could find no better way to control environment than through an act of double destruction. Aggressive hostility and underlying guilt seem appropriate answers.

Also contrary to general criminal homicide is the relatively and significantly small number of homicide-suicide cases with alcohol present. Alcohol was present in the homicide situation (in either the victim, the offender, or both) in as many as 6 to 7 out of 10 homicides in general but in only 3 out of 10 homicides followed by suicide. Partially because all homicides involving whites have a low frequency of alcohol present, the lower frequency of alcohol in the homicide-suicide situation is a reflection of the relatively high proportion of whites among homicide-suicide offenders. Furthermore, 12 of the 17 cases with no alcohol present have been designated unofficially as first degree murder cases. Perhaps the lower incidence of alcohol in homicide-suicide situations indicates a greater likelihood of premeditation by the offender. At any rate, the acts of homicide and suicide combined—if not rational behavior—were committed, more often than the act of homicide alone, without benefit of lowered inhibitions due to alcohol ingestion.

Because most homicide-suicides involve a close personal relationship between victim and offender (as detailed later), it is inferred that a higher proportion of these cases than of all homicides take place in the home—hence, not in the street, in a taproom, or elsewhere. The data confirm this inference and reveal that, though just slightly more than half of all homicides occurred in the home, 20 of the 24 homicide-suicides occurred there. Of these 20, 11 were in the home of both, 7 in the home of the victim, and 2 in the home of the offender. Frequency of cases was highest in the bedroom (8) and living room (8), followed by the kitchen (4), public street (4), taproom (1), and drug store (1).

Suicide that follows homicide is suggested as being caused, in part, by feelings of guilt and remorse. If the suicide immediately followed the homicide and both acts were premeditated, perhaps guilt or remorse feelings were also anticipated. If the two acts occurred in close temporal sequence and both acts were impulsive, most likely guilt feelings arose immediately after the homicide and were too oppressive to bear. Whatever the circumstances, if there were feelings of guilt or remorse, we should expect homicide-suicide offenders to have lived normally within the framework of the general and predominant societal attitudes and value system. Extreme guilt feelings at the horror of having killed another human being

—particularly a loved one—would not be unexpected. From these assumptions, we may infer that homicide-suicide offenders, being ordinarily law-abiding individuals normally regulated by prevailing mores, have experienced arrest for law violation less frequently than homicide offenders in general. The data do in fact significantly show that only one third of homicide-suicide offenders have a previous arrest record compared to nearly two thirds of all offenders. Five of the 8 with police records were arrested for offenses against the person—all for aggravated assault.

It is not sufficient to state that the homicide-suicide offender was imbued with greater guilt feelings than the homicide offender in general merely because of the act of suicide subsequent to the first killing. We are going a step further and postulating the hypothesis that, because the homicide-suicide offender is significantly less likely than the homicide offender in general to have a previous arrest record, he (the homicide-suicide offender) had a superego more strongly developed, more directly patterned along the lines of the prevailing middle class values, and hence had stronger guilt feelings.

The most common type of homicide-suicide is that which involves an intimate relation of adults of the opposite sex. Cavan<sup>23</sup> has similarly noted that close relations between victim and offender in such cases were maintained for some time prior to the killings. In many cases the "if I can't have you no one else can" attitude is manifested by the offender. Not only is the slayer frustrated because of a thwarted love object or goal, but he is often spurned, rejected, made to feel inferior, a failure, or undesired. An injured pride or attacked conception of self is added to his frustration. Henry and Short have suggested the following hypothesis that is partially tested by the Philadelphia data:

The psychological basis of legitimization of other-oriented aggression may also be helpful in accounting for the empirical fact that suicide and homicide often are committed by the same person. . . . If the aggression operates to destroy the flow of nurturance, we would expect—as in the case of divorce—a resultant inhibition of aggression and internalization of the values of the source of frustration. These processes would serve to deny legitimacy to outward expression of aggression consequent to future frustration and the result would be an increased tendency to express aggression inwardly against the self. Murder destroys the source of frustration in the external world. The internalization consequent to the loss of nurturance re-established the source of frustration within self. And the self becomes the legitimate target for aggression. . . .

The hypothesis that persons who follow murder with suicide are persons who deprive themselves through the murder of a primary source of nurturance (as well as a primary source of frustration) may be tested by comparing the degree of positive attachment of murderer and victim prior to the homicide among those who later commit suicide and among those who do not commit suicide.<sup>24</sup>

The "degree of positive attachment" that these authors suggest as the chief criterion for differentiation between those homicides followed by, and those not followed by, suicide would be difficult to quantify and measure. Some empirical light is shed on the problem by pointing out that, in 18 of the 26 victim-offender relationships, the victim was a relative of the offender, and that, in another 7, the victim was the offender's paramour. These combined intimate "primary sources of nurturance" comprised all but one of the relationships among homicide-suicide cases. Of homicides not followed by suicide, relatives and paramours comprised only one third of the victim-offender relationships. These empirical facts, showing

a significantly high proportion of close personal attachments between offenders who commit suicide and their victims, provide a crude test of the hypothesis suggested but not confirmed by Henry and Short. It may, perhaps, be contended that identifying a relationship in terms of family member or paramour still does not measure the degree of "primary source of nurturance," and that a close friend or homosexual partner, in some cases, may satisfy more adequately a need for nurturance. However, the homosexual partners in the Philadelphia cases were not the only homosexual relations the offenders enjoyed. Moreover, all but one of the homicide-suicide cases involved intense, frequent, and very intimate association between victim and offender prior to their deaths. We are assuming that such associations are more characteristic of husbands and their wives, parents and their children, and sweet-hearts than of other types of relationships encountered in the police files.

That the typical interpersonal relation between victim and offender in homicide-suicide cases is a personal and intimate one prior to the slaying is abundantly clear in the following examples summarized from the Philadelphia police files:

A female victim and male offender were next-door neighbors and lovers; she had been separated from her husband for two weeks. Together with another couple they had been making the rounds of taprooms, after which the four went to his apartment. The other couple were in the kitchen making sandwiches when they heard a shot, rushed to the living room, and found the woman shot in the head. The offender went to his bedroom and shot himself, while his friend tried unsuccessfully to wrest the gun from him.

A husband claimed his wife constantly nagged him because he could not satisfy her sexually. One evening, during a particularly boisterous argument, he went to the cellar, got a pistol, and fired four shots at his wife, two of which wounded her. He then grabbed a hatchet and struck her several times on the head. Four days later, in the county prison, he stabbed himself in the heart.

A husband accused his wife of extramarital relations. She was in the process of leaving him to take a separate apartment for herself and two daughters when he shot her in their bedroom, immediately after which he shot himself. The argument began while they were both drinking heavily in the kitchen.

Both a father and his daughter, living together alone, were in poor health. One evening he telephoned his son and informed him that he had just poisoned his daughter and was about to commit suicide. Both the father and daughter were dead on arrival of the police.

A husband and wife had been separated for 18 months. He had left their home, but he retained and managed their small store. According to the note left by the husband, he had been cheated out of his property rights by his wife, son, and daughter, and was once beaten severely by his son. One evening he entered the store while his wife was attending it and shot her and then himself. Both were dead when the police arrived.

An unmarried couple had been going together for six years. One day the young girl wrote the man that she was leaving him for another man. Jealous and seeking revenge, he sought her out, found her walking along the street one evening, shot her four times, and then turned the pistol toward his own head.

In a case where no motive was discovered, a husband returned home from work and discovered his wife and son lying on the kitchen floor beside the gas range. All burners were turned on, and the oven door was open. The woman was 48 years old and the son 3. Both were dead when the man found them. There was no apparent reason for the occurrence, as both mother and son were in good health, and the wife was presumably in good spirits when her husband left for work in the morning.

A wife accused her husband of repeatedly staying out all night and of having extramarital sexual relationships. One morning at 11:50, after one of his all-night escapades, she queried him again. Unable to restrain his temper,

he located his gun, shot her nine times in the presence of their 14 year old daughter, and then shot himself in the chest.

A man and woman had been having extramarital relations for six months. Both were married to other mates, although she was separated from her husband. While drinking, the couple began arguing about their relationships, particularly the woman's inept care of her 11 year old daughter. The man had a revolver in his possession, fired five shots at his paramour, went home, and told his wife what he had been doing and what he had just done. After his confession, he drank poison in his wife's presence, left the house, and boarded a train for New York City, where he was found dead on a dark street.

An estranged husband waited for his wife to return home from work in order to induce her to return and live with him. She refused, she claimed, because he had constantly beaten her. With this rejection, he became enraged, pulled out a gun he was prepared to use in case of rejection, shot her five times, and ran from the scene, screaming that he was also wanted in Georgia for killing two white men. Four days later his body was removed from the Delaware River.

Homicide-suicide is a phenomenon that primarily involves persons of the opposite sex. The ratio of opposite-sex to same-sex relationships among all homicides is about 1 to 2, but among homicide-suicides the ratio is nearly 9 to 1. There were 26 victim-offender relationships, among which were 11 Negro women-Negro men; 10 white women-white men; 2 white men-white men; and 1 each of Negro man-Negro man, Negro man-Negro woman, and white man-white woman. Among these homicide-suicides, none was interracial and there were no cases involving women alone. There were only 3 cases of homicide-suicide involving men alone, but in 2 of these a woman was involved either as a victim in double homicide or as a seriously wounded bystander who was an intended homicide victim. In 18 cases, family members were victims of homicide; in 10, the victims were wives killed by their husbands; in 2, sons killed by their fathers; in 1 each, a daughter was killed by her father, a son by his mother, a mother by her son, a husband by his wife, a great-niece by her great-uncle, and a brother-in-law by his wife's brother. A woman was the victim in 6 of the 7 cases involving paramours.

It is interesting to note that, among the total 588 homicides, in only 1 of the 47 cases in which a wife killed her husband did she later commit suicide but that in 10 of the 53 cases in which a husband killed his wife did he commit suicide. Examination of mate slayings<sup>26</sup> that end in suicide leads us to infer that this differential is due to greater feelings of guilt and remorse among husbands than among wives. We know from previous analysis that of victim-precipitated mate slayings, 28 husbands and only 5 wives were victims who contributed to their own death by making the first assault. The wife who killed her husband after he had slapped or beaten her is less likely to feel remorse or guilt than if she had not been so provoked. Husbands killed their wives significantly more often without such direct physical provocation, and this fact implies that husbands had greater guilt and remorse feelings—hence, they more frequently committed suicide after slaying their mates.

Suicide after homicide may also be an attempt to escape punishment from others. The suicide may in part result from a narcissistic desire to kill oneself instead of being executed by others. At any rate, analysis of the homicide-suicide cases leads to the empirical conclusion that more persons who commit murder in the first degree inflict death upon themselves as punishment for their crimes than are legally executed by the state. Evaluation by three

criminal investigation officers of the homicide squad and by the author resulted in the conclusion that 12 of the 24 homicide-suicide slayers had committed felonious, malicious, and premeditated murder for which (had they survived) they would have been indicted and probably convicted. It is, of course, difficult to predict what sentence they would have received, but out of 621 offenders in criminal homicide 77 were convicted of first degree murder, only 7 of whom were sentenced to death. It is obvious therefore, that, even with the relatively low proportion of suicide after homicide in this country, more offenders inflict death upon themselves than are put to death by collective society. This generalization is probably applicable on the national level also, but homicide-suicides throughout the country have been neither enumerated nor analyzed in detail.

## SUMMARY

Of 621 offenders arrested in Philadelphia between 1948 to 1952, 24 (4 per cent) committed suicide after the crime. Half of these suicides were whites, a significantly higher proportion than that found among all homicide offenders. Victims and offenders of the opposite sex outnumbered those of the same sex by a ratio of 9 to 1. Of the 24 homicide-suicides, 22 were men, nearly half of whom had killed their wives. The personal, intimate relationship between victim and offender is the characteristic type of relationship in the homicide-suicide. Homicide-suicides are significantly more violent than "simple" homicides, thus suggesting a greater reservoir of frustration and aggression in the former, as well as unendurable guilt feelings requiring socially recognized demonstration. Strong, personal and intimate relationship between homicide victim and suicide offender means that the loss of primary nurturance through murder re-establishes the source of frustration in self, and the self becomes a legitimate object for aggression. Finally, more offenders inflict death upon themselves than are put to death by the social sanction of legal execution, and this fact may confirm the psychoanalytic hypothesis regarding a narcissistic desire to punish self rather than being punished by others.

## RESUMEN

De los 621 delincuentes arrestados en Filadelfia entre 1948 y 1952, se suicidaron 24 (4 por ciento) después de cometido el crimen. La mitad de estos suicidas fueron de raza blanca, una proporción significativamente más elevada que la hallada entre todos los homicidas. Las víctimas y los delincuentes del sexo opuesto, sobrepasaron a las víctimas y a los delincuentes del mismo sexo, en la proporción de 9 a 1. De los 24 homicidas-suicidas, 22 fueron hombres y cerca de la mitad de ellos mataron a sus esposas. La fuerte relación personal e íntima entre cada víctima y el suicida, implica que la pérdida de las satisfacciones primordiales de éste, que sigue como consecuencia del asesinato, renueva en él la fuente de frustración y lo convierte en un legítimo objeto para la agresión. Finalmente, la mayoría de los delincuentes se matan antes que la sanción social o legal los ejecute, hecho éste que puede confirmar la hipótesis psicoanalítica relacionada con un deseo narcisístico de castigarse a sí mismos, antes de que los castigue la sociedad.



## RESUME

Sur 621 criminels arrêtés à Philadelphie entre 1948 et 1952, vingtquatre (soit 4 pour cent) se sont suicidés à la suite de leur crime. La moitié de ces suicidés étaient des blancs, ce qui représente une proportion nettement supérieure à celle relevée sur la totalité des homicides. La fréquence des meurtres perpétrés sur une personne du sexe opposé a été neuf fois supérieure à celle des crimes commis sur une victime du même sexe. Sur les 24 criminels ayant attenté à leurs jours, 22 étaient des hommes, près de la moitié desquels avaient tué leur propre femme. L'existence de rapports personnels et intimes entre le meurtrier et sa victime est caractéristique dans les cas de suicide après homicide. Ce type de criminels fait preuve d'une violence manifestement plus grande que les homicides "simples", ce qui suggère, chez les premiers, la présence d'une accumulation plus grande de sentiments de frustration et d'agressivité, en même temps qu'un sens de culpabilité intolérable, demandant à s'exprimer sur un plan socialement ostensible. L'existence de relations d'un caractère nettement personnel et intime entre la victime et le suicidé-meurtrier montre que la suppression, au moyen du crime, de son aliment primitif, remplace la source de la frustration dans l'ego, qui devient alors un objet légitime d'agression. En définitive, le nombre des criminels qui s'infligent la mort à eux-mêmes est supérieur à celui des criminels condamnés à la même peine par la sanction légale de la société, et ce fait confirme l'hypothèse psychoanalytique d'un désir narcissique de se punir soi-même plutôt que d'être puni par les autres.

## REFERENCES

1. TARDE, G.: *Penal Philosophy*, Boston, Mass., Little, Brown & Co., 1912.
2. DURKHEIM, E.: *Suicide: A Study in Sociology*, Glencoe, Ill., The Free Press, 1951.
3. FERRI, E.: *Criminal Sociology*, Boston, Mass., Little, Brown & Co., 1917.
4. VERKKO, V.: *Homicides and Suicides in Finland and Their Dependence on National Character*, Copenhagen, Denmark, G. E. C. Gads Forlag, 1951.
5. DUBLIN, L. I., AND BUNZEL, B.: *Thou shalt not kill: A study of homicide in the United States*, Survey Graphic 24:127-131, 1935.
6. PORTERFIELD, A. L., AND TALBERT, R.: *Crime, Suicide, and Social Well-Being*, Fort Worth, Texas, Leo Potishman Foundation, 1948.
7. SCHMID, C.: *Suicide in Minneapolis*, Minnesota, Am. J. Sociol. 39:42, 47, 1953.
8. RAVEN, A.: *Murder and suicide as marks of an abnormal mind*, Am. Sociol. Rev. 21:315-333, 1929.
9. LEHRMAN, P.: *Some unconscious determinants of homicide*, Psychiatric Quart. 13:605, 1939.
10. MENNINGER, K.: *Psychoanalytic aspects of suicide*, Internat. J. Psycho-Analysis 14:387, 1933.
11. SCHILDER, P.: *The attitude of murderers towards death*, J. Abnorm. & Social Psychol. 13:3, 1936.
12. ZILBOORG, G.: *Some sidelights on the psychology of murder*, J. Nerv. & Ment. Dis. 81:442, 1935.
13. BROMBERG, W.: *A psychological study of murder*, Internat. J. Psycho-Analysis 32:1-2, 1951.
14. BROMBERG, W.: *Murder is seen as bizarre form of attempted suicide*, Sc. News Letter 36:377, 1939.
15. BROMBERG, W.: *Suicide is murder*, Sc. News Letter. 47:295, 1945.
16. STRAUS, J., AND STRAUS, M.: *Suicide, homicide, and social structure in Ceylon*, Am. J. Sociol. 58:469, 1953.
17. PORTERFIELD, A.: *Suicide and crime in folk and in secular society*, Am. J. Sociol. 57:331-338, 1952.
18. DURRETT, M., AND STROMQUIST, N.: *Preventing violent death*, Survey 59:437, 1925.
19. *The Illinois Crime Survey*, Chicago, Ill., Illinois Association for Criminal Justice and the Chicago Crime Commission, 1929, p. 612.
20. GREGORY, J.: *Report on the death penalty in Pennsylvania for the years 1918-1939 inclusive*. Unpublished report in author's files.



21. 1949-1953 Report, based on Royal Commission on Capital Punishment, London, England, H. M. Stationery Office, 1953, Appendix 3, Table 1, pp. 298-301.
22. Criminal Statistics for England and Wales, 1950, London, 1951, p. xxvi. Cited by GRÜNHUT, M.: Murder and the death penalty in England, *Ann. Am. Acad. Polit. & Social Sc.* 284:158-166. 1952.
23. CAVAN, R.: Suicide, Chicago, Ill., University of Chicago Press, 1928, pp. 258, 262.
24. BERG, I., AND FOX, V.: Factors in homicides committed by 200 males. *J. Social Psychol.* 26:109-119, 1947.
25. HENRY, A., AND SHORT, J.: Suicide and Homicide, Glencoe, Ill., The Free Press, 1954, pp. 116-117; 126-127.
26. WOLFGANG, M. E.: Husband-wife homicides, *J. Social Therapy* 2:263-271, 1956.

---

### First Annual Neuro-Psychiatric Institute Held

The theme of the First Annual Neuro-Psychiatric Institute held in April, 1958, at the Veterans Administration Hospital, Coatesville, Pa., was "Trends in Biological Research in Schizophrenia." The meeting was divided into two sessions.

The first session was moderated by Carl F. Schmidt, M. D., Professor of Pharmacology at the University of Pennsylvania, and included the following presentations:

"Evaluation of serum oxidase activity in schizophrenia by a modification of the Akerfeldt test," by Herbert Sprince, Ph.D.; "The effect of LSD-25 on escape and avoidance responses in the rat," by Charles L. Hamilton, Ph.D.; "A chemical (neurohumoral) basis for cerebral dysfunction and psychosis," by Amadeo S. Marrazzi, M. D.; and "Psychic energizers: A review and critique," by Ivan F. Bennet, M. D.

The second session was moderated by Kenneth E. Appel, M.D., Chairman, Department of Psychiatry at the University of Pennsylvania Medical School, and included: "Some recent studies in the biochemistry of schizophrenia," by Mark D. Altschule, M. D.; and "A new class of psychotogenic and antipsychotogenic substances," by Leo G. Abood, Ph.D.

# A Critical Study of Promazine Therapy

V. John Kinross-Wright, M. D., and S. Bergen Morrison, M. D.\*

HOUSTON, TEXAS

There are two very striking properties of chlorpromazine, the first of the ataraxics. One is the great diversity of its effects upon the organism. The other is the inviting susceptibility of its chemical structure to modification. Many hundreds of these modified phenothiazines have been synthesized. A fair number have been tested clinically. Three of them, chlorpromazine (Thorazine\*), promazine (Sparine†), and mepazine (Pacatal‡), have been marketed as ataraxics. The others have remained within the laboratory for various reasons.

The goal of structural rearrangement is a drug with more ataractic activity, fewer side effects, and, hopefully, new therapeutic effects upon abnormal behavior. Although it is easy to synthesize phenothiazine derivatives, it is by no means so easy to screen them for clinical usefulness. Even the extensive battery of ingenious animal tests currently in use are not infallible indicators of therapeutic value. Many of the pharmacological effects of this group of compounds are unique to man. Hence, there is still a great deal of trial and error involved. Fortune certainly smiled upon psychiatry when the clinical trials of chlorpromazine fulfilled pharmacologists' expectations.

There are certain rules concerning the relationship between the pharmacology of a drug and its chemical structure. One of these involves the potentiation of activity by halogenation of the nucleus, e. g., chlorpromazine. On the other hand, the addition of chlorine or any other halogen radical may create undesirable toxic effects. Hence, greater therapeutic potency might be outweighed by increased side effects. As a result of such considerations promazine, which may be regarded as unchlorinated chlorpromazine, was developed.

## PHARMACOLOGY OF PROMAZINE

Promazine is 10-( $\gamma$ -dimethylamino-*n*-propyl)-phenothiazine hydrochloride. Readily soluble in water, it may be administered orally or parenterally. Animal pharmacology indicates that promazine has essentially the same order of activity as chlorpromazine. However, milligram for milligram it is one-third to one-quarter as potent. This is true of the depressant and adrenolytic properties. It produces the same reversal of epinephrine response. It also has anticonvulsant and barbiturate-potentiating activity in mice. Acute and subacute toxicity studies reveal high tolerance by laboratory animals without evidence of histological change in the tissues following prolonged administration.

---

From the Department of Psychiatry, Baylor University College of Medicine, Houston.

\* The trade name of Smith, Kline & French Laboratories for chlorpromazine hydrochloride is Thorazine.

† The trade name of Wyeth Laboratories for promazine hydrochloride is Sparine.

‡ The trade name of Warner-Chilcott Laboratories for mepazine is Pacatal.

## CLINICAL STUDIES

At the time of writing, only a few reports of the use of promazine are to be found in the literature. Fazekas et al.<sup>1, 2</sup> gave promazine to more than 400 patients with delirium tremens, drug addiction, withdrawal syndrome, and acute psychoses requiring temporary restraint prior to transfer to another hospital. The impression gained was that the drug was an effective agent for these purposes with very low toxicity. Mitchell<sup>3</sup> treated 140 acute alcoholic patients with satisfactory response and few side effects. Rudy et al.<sup>4</sup> found that remissions occurred in 4 and improvement in 10 of 15 acute cases of schizophrenia. Of 23 chronic schizophrenic patients treated by him, 3 improved and maintained improvement after the drug was discontinued. The other 20 cases showed initial improvement but regressed after promazine was withdrawn. After studying the effects of the drug upon 50 cases of alcoholism, Figurelli<sup>5</sup> stated: "Promazine can be administered with complete confidence." The maximum daily dosage used by these authors was in the range of 400 to 1000 mg. either orally or parenterally. In the majority of the patients, medication was of a few days' duration. However, Usdin<sup>6</sup> mentions that a few of his patients were maintained on an unspecified amount of the drug for as long as four months.

In view of the paucity of data on the use of promazine as a primary therapeutic agent in schizophrenia, the authors decided to conduct a limited, but intensive, investigation of this subject.

## CASE MATERIAL AND METHODS

The treatment, setting, personnel, selection of patients, and treatment regimen have become standardized over the past three years of testing new chemotherapeutic agents of this type. Quite logically, chlorpromazine has become the standard against which new drugs are evaluated. A more detailed account of this procedure is given in a paper by one of the authors.<sup>7</sup>

The setting was an intensive psychiatric treatment service with adequate and experienced staff in a medical school teaching hospital. The 30 patients in the series were selected insofar as they might be expected to respond to intensive chlorpromazine treatment. Twenty-six of them were given a diagnosis of schizophrenia, mostly of less than two years' duration, 2 a diagnosis of severe endogenous depression, and 1 each of toxic delirium and severe chronic anxiety state respectively. All patients were given a thorough medical investigation including blood and liver studies.

A standardized dosage schedule was followed except in occasional instances where deviations were medically obligatory. Patients were started on 100 mg. four times daily by mouth. An equivalent amount was given parenterally to uncooperative patients. Dosage was increased by 400 mg. daily in divided amounts until beginning signs of clinical remission were noted or limit of tolerance was reached. The maximum therapeutic dose was maintained for 7 to 10 days and then reduced by 400 mg. every one or two days to a maintenance dose of 100 mg. four times daily. Average maximum dose was 2000 mg. daily. The highest dose used was 3200 mg. a day (and this did not benefit the patient). Patients who failed

# A CRITICAL STUDY OF PROMAZINE THERAPY

TABLE I

*Immediate Results with Intensive Promazine Treatment*

Number of patients and diagnosis	Responses to treatment			
	Class 1	Class 2	Class 3	Class 4
Schizophrenia . . . . . 26	2	7	5	12
Psychotic depression 2				2
Chronic anxiety state 1				1
Toxic delirium 1	1			
Totals 30	3	7	5	15

to respond were treated with alternative methods. Those who were discharged were maintained on 400 mg. of promazine for an indefinite period in the outpatient clinic.

Response to treatment was evaluated on a four point scale. Complete freedom from symptoms was graded as class I. Presence of some clinical symptoms, but with discharge from hospital at the termination of intensive treatment to independent existence at home, was graded as class II. Class III implies improvement of a symptomatic nature without major change in the course of the illness. Those worse or unchanged fall into class IV.

## RESULTS

For the 26 cases of schizophrenia, it is convenient to consider those in classes I and II as making an adequate response. At the time of discharge from hospital, 9 patients (34 per cent) fell into this group and 17 (65 per cent) were not satisfactorily improved. (See table I.) However, after 3 months on maintenance dosage, only 6 (23 per cent) of the discharged patients were continuing to do well at home. Some of the 20 patients who either failed to respond to the drug or who relapsed after discharge were treated with the same standardized treatment regimen but with chlorpromazine instead of promazine. Seven patients showed adequate response (classes I and II) and were discharged home.

Neither the depressions nor the anxiety state were helped by promazine. The case of toxic delirium, which is included for the sake of completeness, responded promptly to a shortened course of promazine.

## SIDE EFFECTS AND COMPLICATIONS

Two patients noted local irritation, after swallowing the drug, associated with epigastric distress. Autonomic effects included a drop in systolic blood pressure of more than 30 points in 4 patients, dryness of the mouth in 2, and dizziness in 2. The other autonomic effects, frequently seen with chlorpromazine, were not exhibited. Two patients were excessively sedated. None of these effects necessitated intervention in the dosage schedule, and they were not intolerable to the patients.

A considerable number of serious complications were encountered. Wherever possible

TABLE II  
*Complications of Intensive Promazine Therapy (30 Cases)*

Complication	Number
Grand mal seizure	7
Toxic confusion	6
Agranulocytosis	1
Nausea, vomiting, liver tenderness	1

the treatment was continued at a reduced level. One or more grand mal seizures occurred in 7 patients, i. e., 23 per cent of total.

None of these patients gave previous history of convulsive disorder. Unfortunately, electroencephalographic studies were not available during this series. The average dose at time of seizure was 1640 mg., and the average duration of treatment had been 16 days. As little as 800 mg. daily of promazine for seven days caused seizure in 1 patient. Six patients developed acute confusional states after dosages averaging 2000 mg. daily. These patients had been receiving promazine for an average of 13 days. Three of the patients with confusion developed seizure (and are included in the 7 listed earlier) from three hours to three days later, although 2 of them had had their dosages reduced 200 and 400 mg. daily, respectively. Parkinsonism, which is such a striking complication of chlorpromazine, was conspicuous by its absence; this should provide food for thought.

Idiosyncratic responses to promazine in this series include 1 patient with agranulocytosis and another with a possible case of jaundice. The former patient, a woman, developed typical symptoms six weeks after starting treatment. White count fell below 1500 cells/cu. mm. with absence of granulocytes. Her blood count returned to normal within a month with supportive treatment. It is interesting to note that this patient received promazine for only two weeks and that the appearance of the blood dyscrasia was delayed for a further four weeks.

The sudden onset of right upper quadrant pain, nausea, and vomiting, associated with an elevation of alkaline phosphatase level in 1 patient, was highly suggestive of a "chlorpromazine-type" jaundice. However, the patient was not clinically jaundiced and symptoms disappeared five days after drug withdrawal. Dermatitis did not occur.

#### LABORATORY FINDINGS

Biweekly determinations of serum thymol turbidity, alkaline phosphatase, and serum bilirubin, together with complete blood count, were made throughout treatment on all patients. There was a general tendency toward leukopenia while on the drug, and, of course, 1 case of agranulocytosis. Liver function was unchanged except in the 1 case cited.

#### DISCUSSION

In addition to the study just described, the authors have had occasion to treat a considerable number of other patients with promazine and to observe those under treatment by col-

leagues. The use of promazine in the treatment of acute alcoholism and delirium tremens in the emergency room of the medical school hospital is widespread. Our observations confirm the reports in the literature that, given intravenously in doses up to 200 mg., it is a safe and effective way of producing rapid sedation. Severe hypotensive effects do not commonly occur, in contrast to the effects of chlorpromazine, which is unsuitable for general use intravenously on this account. Given intramuscularly, promazine is much less effective, except in doses of several hundred milligrams. The sedation produced by intravenous promazine is of several hours' duration and usually controls the patient well enough so that he can be continued on oral therapy thereafter, either with the same or another drug. Intravenous promazine appears to be reasonably consistent in its effects and without the undesirable effects of barbiturates.

For the treatment of more intractable toxic-confusional states such as those associated with intracranial lesion, postoperative psychoses, and bromism, the authors believe that promazine is less useful than chlorpromazine. A number of patients who developed psychoses following aorta grafting operations showed no response to promazine orally or intramuscularly but did well with smaller doses of chlorpromazine.

Psychoneurotic patients respond as unpredictably to promazine as they do to most chemotherapy. In general, it may be said that promazine in equivalent doses has considerably less sedative effect than chlorpromazine. It has the advantage of producing far less in the way of autonomic side effects, such as dizziness, dry mouth, and lethargy, of which anxious patients are often very intolerant. However, in view of the larger doses necessary to produce a similar degree of relief from tension, excessive sedation and dizziness are frequently seen. Like chlorpromazine, it may on occasion cause an increase in nervous tension.

More serious complications have been noted, too, with relatively small doses of promazine. A patient with a chronic anxiety state suffered a convulsion while on 200 mg. daily. Another had a seizure while on 400 mg. daily, though she admitted that she took more. This latter patient also developed a severe photosensitization (as she had also done with chlorpromazine). Two instances of dermatitis with promazine are also known to the authors.

Promazine has been used quite effectively where mild sedation was required to control anxiety occurring in stress situations in nonpsychiatric patients in doses of 25 to 50 mg.

The authors have formed the opinion that in doses of less than 400 mg. daily promazine is a useful ataractic agent with about one third the potency of chlorpromazine. It has the advantage of being substantially, though not entirely, free from unpleasant autonomic side effects. Idiosyncratic or allergic reactions such as dermatitis and possibly jaundice can occur, though apparently infrequently. In this connection, however, it might be noted that the authors' incidence of jaundice with chlorpromazine is less than 0.1 per cent in several thousands of cases. One case of agranulocytosis has been already noted, and the writers have received informal reports of other cases.

In the much larger doses used in intensive treatment of psychoses, promazine presented some rather unexpected aspects. Both pharmacological data and therapeutic experience indicate that promazine is approximately one-third as potent as chlorpromazine. Yet in equivalent doses the incidence of seizures and toxic-confusional states was almost 20 times

as great. The high frequency of these serious complications, which imply central nervous system toxicity, together with the inferior clinical results, indicates that it is not a suitable drug for the intensive treatment of schizophrenia.

The failure of any patients on promazine to develop a parkinsonian syndrome has already been commented upon. Perhaps, if it had been possible to give larger amounts, this might have occurred, though is considered unlikely, since chlorpromazine has been known to produce this syndrome in doses of a few hundred milligrams daily. Those who believe that some degree of parkinsonism is necessary to produce good clinical results with chlorpromazine (or reserpine) might wish to explain the poor promazine results on this basis.

In conclusion, the authors wish to draw attention to the striking dissimilarities of promazine and chlorpromazine despite their close chemical kinship. The absence of the chlorine radical does reduce potency and some of the side effects, it is true, but it also markedly alters the nature of the action upon the central nervous system. This surely is a clinical clue to stimulate research.

## RESUMEN

Se comunicó que la promazina es un sustituto eficaz de la cloropromazina y, según se ha dicho, produce bastantes menos efectos tóxicos. En este estudio se examinan los efectos de la droga, sobre 30 pacientes psiquiátricos hospitalizados, 26 de ellos esquizofrénicos. Los autores adoptaron el mismo plan de tratamiento que habían seguido previamente y en el que utilizaron, como promedio, dosis máximas de 2.000 mg., durante 10 días. Como la promazina, en experimentos hechos con animales, probó ser de una potencia aproximadamente igual al 25 por ciento de la que posee la cloropromazina, las dosis dadas no se consideran muy elevadas. La respuesta terapéutica fue menos satisfactoria que con la cloropromazina. Los efectos secundarios autonómicos fueron relativamente insignificantes. Un paciente desarrolló agranulocitosis. Siete de los 30 pacientes experimentaron una o más convulsiones. No se registró parkinsonismo. En vista de la elevada incidencia de complicaciones tóxicas graves, los autores no favorecen el empleo de la promazina para farmacoterapia intensiva, aunque manifiestan que otras experiencias indican que la promazina es un sedativo eficaz administrada por vía intravenosa y que se puede usar también con seguridad, en pequeñas dosis, como tranquilizante.

## RESUME

La promazine a été présentée comme un succédané efficace de la chlorpromazine tout en ayant, paraît-il, beaucoup moins d'effets toxiques que cette dernière. Dans cette étude, les auteurs ont passé en revue l'action de la promazine sur 30 psychopathes hospitalisés, dont vingt-six atteints de schizophrénie. Le plan du traitement était celui adopté précédemment par ces auteurs et comportait, dans l'ensemble, une dose quotidienne maxima de 2.000 mg. pendant dix jours. La promazine s'étant révélée, dans les expériences faites sur l'animal, comme quatre fois moins active que la chlorpromazine, les doses administrées ne sont pas considérées comme très élevées. La réponse thérapeutique a été moins satisfaisante qu'avec la chlorpromazine. Les réactions secondaires autonomes ont été relativement peu apparentes.



Un malade a présenté de l'agranulocytose. Sept des 30 malades traités ont eu une ou plusieurs convulsions. Il n'y a pas eu de cas de maladie de Parkinson. En raison de l'incidence élevée des complications toxiques graves, les auteurs ne préconisent pas l'emploi de la promazine pour une pharmacothérapie intensive. Une expérience ultérieure des auteurs montre que la promazine, administrée par voie intraveineuse, est un sédatif satisfaisant et que, d'autre part, elle peut être employée sans inconvénient à doses faibles comme tranquillisant.

#### REFERENCES

1. FAZEKAS, J. F.; SULLIVAN, P. D., AND SCHULTZ, J. D.: Use of dimethylamino-*n*-propylphenothiazine in the management of patients with acute mental disturbances, *M. Ann. District of Columbia* 25:67, Feb., 1956.
2. FAZEKAS, J. F.; SCHULTZ, J. D.; SULLIVAN, P. D., AND SHEA, J. G.: Management of acutely disturbed patients with promazine, *J. A. M. A.* 160:46, 1956.
3. MITCHELL, E. H.: Treatment of acute alcoholism with promazine (Sparine), *J. A. M. A.* 160:44, 1956.
4. RUDY, L.; HIMWICH, H., AND TASHER, D.: Promazine and Pacatal, clinical evaluation, *Prescriber* 6:18, 1956.
5. FIGURELLI, F. A.: The promazine treatment of alcoholism, *Indust. Med. & Surg.* 25:8, 376-380, 1956.
6. USDIN, G. L.: Use of promazine in psychiatric practice. An early study, *J. Louisiana Med. Soc.* 108:251, 1956.
7. KINROSS-WRIGHT, V. J.: Intensive chlorpromazine treatment of schizophrenia, *Psychiatric Research Rep.* 1:53, 1955.

#### International Conference on Insulin Treatment

An International Conference on the Insulin Treatment in Psychiatry has been arranged to present recent advances in the basic aspects and clinical uses of Sakel's discovery, with morning and afternoon sessions on Friday, October 24, and a morning session on Saturday, October 25. The meeting is co-sponsored by S. Bernard Wortis, M. D., Professor of Psychiatry and Neurology, New York University, D. Ewen Cameron, M. D., Professor of Psychiatry, McGill University, and Jacques S. Gottlieb, M. D., Professor of Psychiatry, Wayne State University. It will be held at the New York Academy of Medicine, Fifth Avenue and 103 Street, New York. All interested individuals are invited to attend. For details, write to Dr. M. Rinkel, 479 Commonwealth Avenue, Boston 15, Mass.; Dr. A. K. Bernath, 985 Fifth Avenue, New York 21, N. Y.; or Dr. H. E. Himwich, Galesburg State Research Hospital, Galesburg, Ill.

# The Inhibition of a Conditioned Response Following Arecoline Administration in Man

C. M. Franks, Ph.D.;\* D. S. Trouton, M. Sc., M. B.; and S. G. Laverty, M. R. C. P.†

LONDON, ENGLAND

The interpretation of the effects of drugs on conditioned responses is likely to be complicated by the occurrence of systemic effects. This applies particularly to the parasympathomimetic drugs whose pronounced peripheral effects interfere with the performance of the conditioned responses to an unknown extent. Recently, Pfeiffer and Jenney<sup>17</sup> avoided this complication using a rather ingenious method; they investigated the effects on the central nervous system of subcutaneous injections of arecoline on conditioned avoidance responses in rats that were protected from the peripheral parasympathetic (muscarinic) effects of this drug by injections of methyl atropine, which, unlike both arecoline and atropine, is supposed not to pass the blood-brain barrier. They found that arecoline (and also pilocarpine and eserine) temporarily extinguished the conditioned avoidance responses, and that atropine prevented this effect.

The present investigation is concerned with the inhibition (or temporary extinction) of the conditioned eye blink response in man following the subcutaneous injection of arecoline.‡

## SUBJECTS

Twenty-four subjects were tested in four groups of 6, the treatments of the four groups being as follows: (A) Arecoline, 7.5 mg., with methyl atropine, 1.5 mg. (0.5 ml.); (B) methyl atropine alone (0.75 mg. in 0.25 ml.); (C) no injection, but exposed to the same conditioning procedure as the other two groups; (D) a placebo injection of distilled water.

All subjects were hospitalized but not severely neurotic patients who had consented to take part in the experiment. None of them was receiving drugs at that time, and none had a history of neurological disorder. As the aim was to demonstrate the inhibitory effect of the arecoline on the conditioned eye blink response, only those subjects who were able to acquire these responses readily could be included in the treatment groups. To find 24 suitable subjects, 34 volunteers had to be tested initially.

## PROCEDURE

The soundproof laboratory and conditioning apparatus have been described in detail elsewhere.<sup>5-7</sup> The unconditioned stimulus consisted of an air puff (duration, 500 milliseconds; pressure, 65 mm. of mercury) delivered to the right eye; the conditioned stimulus was a pure

From the Institute of Psychiatry, Maudsley Hospital, University of London, London, England.

\* Now at the Neuro-Psychiatric Institute, Princeton, N. J.

† Now at the Department of Psychiatry, University of Edinburgh, Scotland.

‡ We are indebted to Professor Carl Pfeiffer for providing us with this preparation of arecoline and methyl atropine and for a preliminary communication of his own work, which led us to undertake this investigation.

tone (frequency, 1100 cycles per second; duration, 800 milliseconds; and intensity, 65 decibels above the patient's hearing threshold).

The tone was delivered to both ears through a pair of balanced earphones, and the two stimuli were so arranged that the air puff began 350 milliseconds after the commencement of the tone. The time intervals and other physical variables were controlled electronically, and the occurrence of all stimuli and their appropriate responses was registered on a multi-channel recording milliammeter. The eye blinks were detected and measured by means of a small photoelectric cell attached to the spectacles housing the air puff delivery tube. This method of recording eye blinks is particularly suited to experiments with neurotic subjects, since the use of cotton thread, electrodes, or any other direct attachment to the subject is avoided.<sup>10</sup>

Before the experiment began, each subject's hearing threshold was ascertained and brief tests for pseudoconditioning and for initial sensitivity to sound were carried out. Any subjects whose hearing threshold was worse than -20 decibels or who blinked initially to sound was excluded from the experiment.

All subjects were submitted to a conditioning procedure consisting of 40 reinforced trials, delivered irregularly at approximately 25 second intervals. Interspersed among these 40 reinforced trials were 15 test trials (called acquisition trials), during which the conditioned stimulus (tone alone) was presented. The criterion of sufficient conditioning for the experiment to proceed was that the subject concerned should give conditioned responses to the last 2 of the 15 acquisition test trials. If he satisfied this criterion, he was given five more consecutive reinforced trials, making a total of 45 reinforced trials altogether, and the appropriate treatment was carried out. The suitable subjects were allocated at random to their respective treatment groups.

For treatments A, B, and D, each subject was given a subcutaneous injection into the left arm, anteriorly, about 2 in. above the anterior cubital fossa. This injection was given immediately after the forty-fifth reinforced trial, care being taken to avoid accidental injection into a vein, and the area was massaged gently to facilitate rapid absorption. The experimenter who did the conditioning was not told which treatment the subject received. He was not even aware which subjects received the "no injection" treatment. Conversation with the subjects by the conditioning experimenter was restricted to a minimum. Thus contamination and suggestion effects were minimized, and neither the laboratory experimenter nor the subjects was aware which treatment had been received (except for the "no injection" group C, of course).

Two minutes after the needle had been withdrawn, the conditioning session was resumed, this time interval being in accordance with that originally used by Pfeiffer and Jenney.<sup>17</sup> For the "no injection" treatment group, the same time interval was allowed to elapse. The post-treatment conditioning procedure consisted of a series of 30 successive nonreinforced test trials (called extinction trials), delivered at irregular intervals of approximately 60 seconds, so that the final test trial was given 32 minutes after the injection. In conclusion, all subjects were asked to describe any subjective changes or experiences observed after the treatment was given.

TABLE I  
Mean Number of Conditioned Responses at Acquisition Test Trials

Acquisition test trials	Group A	Group B	Group C	Group D
No. 1	1	1	1	1
No. 2	4	4	3	3
No. 3	4	5	4	4
No. 4	4	5	4	5
No. 5	5	5	5	5
No. 6	4	4	5	4
No. 7	4	4	5	5
No. 8	4	5	5	4
No. 9	5	4	6	5
No. 10	6	5	5	5
No. 11	6	6	5	4
No. 12	6	6	6	5
No. 13	5	6	6	6
No. 14	6	6	6	6
No. 15	6	6	6	6

## RESULTS

Before discussing the results, several comments are apposite. First, the present report must be regarded as preliminary, since certain drug combinations have not been included, in particular an arecoline plus atropine group and an atropine alone group. There is, however, good evidence to suggest that, if atropine has any effect, this effect is in the opposite direction to that predicted for the arecoline and methyl atropine mixture, i. e., in large doses atropine may lead to the temporary recovery of inhibited or extinguished conditioned responses.<sup>13, 17</sup>

The second comment concerns the fact that the dose of methyl atropine alone was only one half that of the dose used in combination with arecoline. This situation arose because, before giving the various treatment combinations to patients, the experimenters tested the preparations concerned on each other. It was found that 1.5 mg. of methyl atropine alone produced more discomfort and tachycardia than was thought suitable during an actual experiment in which the patient was required to sit fairly still. A dose of 0.75 mg. in 0.25 ml. was thought to be more suitable, the only effects noted in the preliminary testing of the four treatments finally adopted being dryness of the mouth and tachycardia up to the rate of 120 per minute. It is possible that part of the methyl atropine in combination with the arecoline is used up in countering the effects of the arecoline peripherally. The increased heart rates obtained with the smaller dose of methyl atropine alone and those obtained with the combination of drugs are similar. Since methyl atropine is not supposed to pass the blood-brain barrier or to have effects on the central nervous system, it would seem adequate to equate for peripheral effects such as heart rate. Consequently, the difference in dosage of methyl atropine in treatments A and B, although undoubtedly a limitation of the present experiment, is probably of little importance.

## INHIBITION OF A CONDITIONED RESPONSE

TABLE II  
Mean Number of Conditioned Responses at Extinction Test Trials

Extinction test trials	Group A, arecoline and methyl atropine	Group B, methyl atropine alone	Group C, no in- jection	Group D, placebo
No. 1	5	6	6	6
No. 2	4	6	6	6
No. 3	3	6	6	6
No. 4	3	5	6	5
No. 5	3	6	5	6
No. 6	3	6	6	5
No. 7	1	5	6	6
No. 8	2	5	5	5
No. 9	1	5	5	4
No. 10	0	5	4	6
No. 11	0	6	5	5
No. 12	0	4	6	5
No. 13	0	5	4	5
No. 14	1	4	5	4
No. 15	2	4	4	5
No. 16	2	3	4	4
No. 17	3	4	3	3
No. 18	3	4	3	4
No. 19	2	3	4	4
No. 20	1	4	3	4
No. 21	2	3	2	3
No. 22	2	3	3	3
No. 23	1	3	3	2
No. 24	1	3	2	3
No. 25	1	2	3	2
No. 26	0	4	3	2
No. 27	1	2	2	2
No. 28	2	2	2	1
No. 29	0	0	0	1
No. 30	0	1	0	0

Table I presents the mean number of conditioned eye blink responses given by each of the four groups during the pretreatment stage when the conditioned response was being acquired (acquisition test trials 1 through 15). It is clear from the data that by the last two acquisition test trials (numbers 14 and 15) all four groups were conditioning readily with approximately equal facility. Table II shows the post-treatment conditioned response behavior when all four differently treated groups were given 30 successive extinction trials. It is apparent from table II that the methyl atropine alone group and the two control groups (C and D) all behave in a similar manner with respect to their rate of extinction and show typical extinction curves. Thus on the first two extinction trials 100 per cent of all three groups give

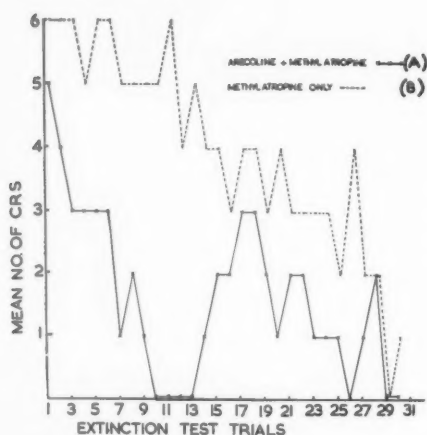


FIG. 1. Conditioned response behavior during extinction test trials of subjects receiving arecoline plus methyl atropine and of subjects receiving methyl atropine only.

conditioned responses, but by the last two extinction trials (numbers 29 and 30) the conditioned response is almost totally extinguished.

The similarity in rate of extinction of conditioned responses between the "no treatment" and the placebo groups is to be expected and is in close agreement with the findings of the same experimenters in studies of both conditioning and various aspects of verbal and motor behavior.<sup>8, 16</sup> The similarity between these two control groups and the methyl atropine alone group strongly suggests that methyl atropine, as used in the present experiment, has no observable effect on the rate of extinction of conditioned eye blink responses.

Figure 1 presents the extinction of conditioning data in graphical form. In the interests of clarity, since groups B, C, and D behave in a very similar manner, the two control groups are omitted and only the methyl atropine alone group (B) and the experimental group (A) are represented. The arecoline and methyl atropine combined group (A) shows a much greater rate of initial extinction than the other three groups. Thus groups B, C, and D show no signs of extinction for the first three test trials, whereas group A begins to show some signs of extinction on the first test trial. By the tenth test trial, the conditioned response has disappeared completely in the case of group A, whereas the signs of extinction in the other three groups are only slight. This total inhibition of the conditioned response for group A remains until the thirteenth test trial (i. e., for a period of approximately four minutes); then—as the effects of the arecoline wear off—the conditioned response partially and gradually reappears until by about the seventeenth test trial all four groups are behaving in a similar manner. After this partial recovery, the arecoline group shows a gradual extinction of conditioning in much the same manner as the other groups, the conditioned response being totally extinguished by the last two test trials.

It was evident from the subjective reports of all patients that none of them found the experience distressing. The changes reported were similar after arecoline with methyl atropine and after methyl atropine alone, and could be chiefly attributed to the latter

drug. Dryness of the mouth was reported in 4 to 5 subjects in each drug treatment group (but only in response to specific questioning) and palpitations (variously described) in 3 subjects receiving the mixture and in 2 receiving methyl atropine alone. No marked mood changes were reported; after receiving the mixture 2 subjects reported slight dizziness, 2 felt "more relaxed," 1 felt "more serious," and 1 "anxious." After methyl atropine alone, 2 felt "drowsy and relaxed," 1 reported "less energy than before," and 1 "slight pain at the base of the stomach." These changes do not appear to be in any way specific. None of the subjects in the "no treatment" groups reported any of these symptoms, although 1 of the "placebo" group reported palpitations after the injection and 1 reported "feeling of anxiety."

## DISCUSSION

Studies of the influence of drugs on conditioned responses have shown conflicting results. Dosage may be an important factor; Bulygin<sup>1</sup> found small doses of acetylcholine to enhance conditioned reflexes, whereas larger doses inhibited them. Gantt and Freile<sup>12</sup> claim that acetylcholine improved conditioned responses in dogs and that this effect persisted for several days or even weeks. On the other hand, Funderburk and Case<sup>11</sup> conclude: "Acetylcholine exerts a profound effect on the central nervous system, as indicated by the extinction of the conditioned response—but the mechanism for this effect remains obscure." Pfeiffer and Jenney<sup>17</sup> found no definite effect of acetylcholine on conditioned avoidance responses in rats, although arecoline, eserine, and pilocarpine tended to extinguish conditioned reflexes, this effect being prevented by atropine. They have suggested that depression of conditioned responses by chlorpromazine and reserpine is due to the cholinergic properties of these drugs. However, Decourt et al<sup>12</sup> have shown chlorpromazine to have weak anticholinergic effects. Moreover, although atropine prevented the inhibitory effect of the cholinergic drugs, it did not modify the effects of chlorpromazine and reserpine. This is attributed by Pfeiffer and Jenney<sup>17</sup> to the fact that chlorpromazine and reserpine have more prolonged actions than atropine, which they interpret as evidence that these ataraxics have a greater affinity for certain receptors than that of atropine. It should be observed that not all the drugs at present classed as ataraxics have a depressant effect on conditioned responses.<sup>15</sup> The suppression of conditioned reflexes does not seem to be an essential property of ataractic drugs. It is of some interest that none of the other drugs affecting conditioned reflexes appears to have such a specific effect. For example, a depressant such as amobarbital sodium, even in large doses, does not affect conditioned reflexes so profoundly and, in addition, there are numerous other effects, such as euphoria and ataxia.<sup>9</sup> If it is established that predominantly cholinergic drugs inhibit conditioned reflexes, whereas atropine restores them, this suggests that there may be some cholinergic mechanism that inhibits conditioned reflexes. Various cholinergic systems have been postulated within the central nervous system, such as certain of the phylogenetically older parts of the brain,<sup>3, 4, 14</sup> and also the mesodiencephalic-activating system.<sup>18</sup> However, any attempt to link these mechanisms with conditioning would be premature. Whatever the theoretical significance of the inhibition of the conditioned eye blink response by the arecoline mixture, it is possible that this



finding may be of some clinical importance (if other conditioned reflexes are found to be similarly affected) in psychotherapy based upon the principles of conditioning and learning.

## SUMMARY

The interpretation of the effects of parasympathomimetic drugs on conditioned responses is complicated by the occurrence of pronounced peripheral effects. Based on an animal experiment of Pfeiffer and Jenney, this difficulty was overcome by mixing the drug with an appropriate quantity of methyl atropine, which diminishes these peripheral effects, but is supposed not to pass the blood-brain barrier.

The drug used in the present experiment was arecoline, and the reflex studied was the conditioned eye blink response. Four groups of 6 neurotic subjects were used: A, with arecoline together with methyl atropine; B, with methyl atropine alone; C, with no injection; D, with a placebo injection. The results, which confirm those of Pfeiffer and Jenney, indicate that the arecoline mixture has a pronounced inhibitory effect on the reflex studied, whereas its effects on other overt aspects of behavior appeared to be negligible. This is in marked contrast to the effects of other drugs such as the barbiturates, which depress conditioned responses but also produce numerous side effects.

## RESUMEN

La interpretación de los efectos de las drogas parasimpaticomiméticas sobre respuestas condicionadas, está complicada por la presencia de efectos periféricos pronunciados. Basándose en un experimento animal de Pfeiffer y Jenney, se vencieron estas dificultades mezclando la droga con una cantidad apropiada de metil-atropina, que disminuye estos efectos periféricos, pero se supone que no traspasa la barrera hemato-cefálica.

La droga usada en este experimento, fue la arecolina, y el reflejo estudiado, fue la respuesta condicionada del pestañeo. Se utilizaron cuatro grupos: A, arecolina con metil-atropina; B, sólo metil-atropina; C, sin inyección, y D, con una inyección placebo. Los resultados, que confirman los de Pfeiffer y Jenney, indican que la mezcla de arecolina produjo un pronunciado efecto inhibitorio sobre el reflejo estudiado, mientras que sus efectos sobre otros aspectos manifiestos de la conducta, fueron insignificantes. Existe un notable contraste con los efectos de otras drogas, tales como los barbitúricos, que deprimen la respuesta condicionada, pero también producen numerosos efectos secundarios.

## RESUME

L'interprétation des effets des préparations parasympathomimétiques sur les réponses conditionnées est compliquée par l'occurrence d'effets périphériques marqués. Au cours d'une expérience faite sur l'animal par Pfeiffer et Jenney, cette difficulté a été surmontée en mélangeant au remède une quantité appropriée de méthylatropine, qui minimise ces effets périphériques, mais ne semble pas franchir la barrière hémato-encéphalique.

Le remède employé pour l'expérience relatée ici était l'arécoline et le réflexe étudié, le

clignement d'yeux conditionné. Quatre groupes de six sujets neurotiques furent traités: A, avec de l'arécoline additionnée de méthylatropine; B, avec de la méthylatropine seule; C, sans injection; D, avec injection d'un remède factice. Les résultats, qui confirment ceux obtenus par Pfeiffer et Jenney, indiquent que le mélange d'arécoline exerce une action inhibitoire prononcée sur le réflexe étudié, alors que ses effets sur d'autres aspects manifestes du comportement semblent négligeables. Ceci est en contraste marqué avec les effets d'autres remèdes, tels que les barbiturates, qui réduisent les réponses conditionnées, mais produisent, par contre, de nombreuses réactions secondaires.

## REFERENCES

1. BULGIN, I. A.: Interceptive influences on conditioned and unconditioned alimentary reflexes with irrigation of the mucous membrane of the stomach with acetylcholine (trans.). Dokl. Akad. Nauk. SSSR. 80:273-276, 1957 [abstract in Psychol. Abstr. 1952, 26(4600), 1952].
2. DECOURT, P.; BRUNAUD, M., AND BRUNAUD, S.: Etude expérimentale de la prétendue action ganglioplegique de la chlorpromazine (4560 R. P.), Compt. rend. Soc. de biol. 147:1602-1605, 1953.
3. FELDBERG, W.: Present views on the mode of action of acetylcholine in the central nervous system, Physiol. Rev. 25:596-642, 1945.
4. FELDBERG, W., AND VOGT, M.: Acetylcholine synthesis in different regions of the central nervous system, J. Physiol. 107:372-381, 1948.
5. FRANKS, C. M.: The establishment of a conditioning laboratory for the investigation of personality and cortical functioning, Nature 175:984-985, 1955.
6. FRANKS, C. M.: Conditioning and personality, J. Abnorm. & Soc. Psychol. 52:143-150, 1956.
7. FRANKS, C. M.: Effect of food, drink and tobacco deprivation on the conditioning of the eyeblink response J. Exper. Psychol. 53:117-120, 1957.
8. FRANKS, C. M., AND LAVERTY, S. G.: Sodium Amytal and eyelid conditioning, J. Ment. Sci. 101:654-663, 1955.
9. FRANKS, C. M., AND TROUTON, D. S.: Effects of amobarbital sodium and dexamphetamine sulfate on the conditioning of the eyeblink response, J. Comp. Physiol. Psychol. 51:220-222, 1958.
10. FRANKS, C. M., AND WITHERS, W. C. R.: Photoelectric recording of eyelid movements, Am. J. Psychol. 68:467-471, 1955.
11. FUNDERBURK, W. H., AND CASE, T. J.: Effect of parasympathetic drugs on the conditioned response, J. Neurophysiol. 10:179-187, 1947.
12. GANTT, W. H., AND FREILE, M.: Effect of adrenalin and acetylcholine on excitation, inhibition and neuroses, Tr. Am. Neurol. A. 70:180-181, 1944.
13. GELLHORN, E.: Factors modifying conditioned reactions and their relation to the autonomic nervous system, Ann. New York Acad. Sc. 56:200-213, 1953.
14. HEBB, C., AND SILVER, A.: Choline acetylase in the central nervous system of man and some other mammals, J. Physiol. 134:718-728, 1956.
15. HUNT, H. F.: Some effects of drugs on classical (type S) conditioning, Ann. New York Acad. Sc. 65:258-267, 1956.
16. LAVERTY, S. G., AND FRANKS, C. M.: Sodium Amytal and behaviour in neurotic subjects, J. Neurol., Neurosurg. & Psychiat. 19:137-143, 1956.
17. PFEIFFER, C. C., AND JENNEY, E. H.: The inhibition of the conditioned response and the counteraction of schizophrenia by muscarinic stimulation of the brain, Ann. New York Acad. Sc. 66:753-764, 1957.
18. RINALDI, F., AND HIMWICH, H. E.: Cholinergic mechanism involved in function of mesodiencephalic activating system, A. M. A. Arch. Neurol. & Psychiat. 73:396-402, 1955.

# QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY

✱

*Incorporating the International Record of Psychiatry and Neurology*

WINFRED OVERHOLSER, M.D., Editor-in-Chief

Professor of Psychiatry, George Washington University School of Medicine  
Superintendent of St. Elizabeths Hospital

## National Editorial Board

SPAFFORD ACKERLY, M.D.

*Professor of Psychiatry,  
University of Louisville Medical School*

A. E. BENNETT, M.D.

*Associate Clinical Professor of Psychiatry,  
University of California Medical School*

KARL M. BOWMAN, M.D.

*Former Professor of Psychiatry,  
University of California Medical School*

FREDERIC A. GIBBS, M.D.

*Associate Professor of Psychiatry,  
Illinois Neuropsychiatric Institute*

EDWARD J. HUMPHREYS, M.D.

*Director, Bureau of Mental Health Services  
for Children,  
Pennsylvania Department of Welfare,  
Harrisburg, Pa.*

SOLOMON KATZENELBOGEN, M.D.

*Former Clinical Professor of Psychiatry,  
George Washington University  
School of Medicine*

WILLIAM MALAMUD, M.D.

*Professor of Psychiatry,  
Boston University School of Medicine*

J. M. NIELSEN, M.D.

*Associate Professor of Neurology and  
Psychiatry, University of Southern California*

LEWIS J. POLLOCK, M.D.

*Former Professor of Neurology,  
Northwestern University Medical School*

TRACY J. PUTNAM, M.D.

*Director of Neurosurgery,  
Cedars of Lebanon Hospital,  
Los Angeles, Calif.*

MORTON A. SEIDENFELD, Ph.D.

*Director of Psychological Services,  
National Foundation for Infantile  
Paralysis, Inc.*

LAUREN H. SMITH, M.D.

*Professor of Psychiatry,  
University of Pennsylvania*

JOHN C. WHITEHORN, M.D.

*Professor of Psychiatry,  
Johns Hopkins University Medical School*

## International Editorial Board

MACDONALD CRITCHLEY, M.D.

*Physician, National Hospital  
Queen Square, London*

MOGENS ELLERMAN, M.D.

*Psychiatrist-in-Chief  
Military Hospital  
Copenhagen, Denmark*

HENRI EY

*1, Rue Cabanis  
Paris (XIVe), France*

HANS HOFF, M.D.

*Professor, Neurology and Psychiatry,  
University of Vienna  
Vienna, Austria*

GONZALO R. LAFORA, M.D.

*Director, Psychiatric Clinic for Men,  
General Hospital of Madrid;  
Associate Professor of Psychiatry and Neurology,  
Madrid Medical Faculty  
Madrid, Spain*

EMILIO MIRA Y LOPEZ, M.D.

*Former Professor of Psychiatry,  
University of Barcelona;  
Professor of Normal and Abnormal Psychology,  
Getulio Vargas Foundation, Rio de Janeiro  
Rio de Janeiro, Brazil*

G. H. MONRAD-KROHN, M.D., F.R.C.P. (Lond.)

*Professor of Medicine,  
University of Oslo  
Oslo, Norway*

ABRAHAM MOSOVICH, M.D.

*Research Associate in Neurology,  
Instituto Experimental del Cancer;  
Chief in Electroencephalography,  
Department of Psychiatry,  
Medical School of Buenos Aires*

F. D. ROEDER, M.D.

*Professor of Neurology and Psychiatry,  
University of Göttingen  
Göttingen, Germany*

J. O. TRELLES, M.D.

*Professor of Neurology,  
San Marcos Univ. School of Medicine  
Lima, Peru*

ERIC WITTKOWER, M.D.

*Associate Professor of Psychiatry,  
McGill University  
Montreal, Canada*

JAKOB WYRSCH, D.O.

*Professor of Psychiatry,  
University of Bern  
Bern, Switzerland*

INCORPORATING INTERNATIONAL RECORD



OF PSYCHIATRY AND NEUROLOGY

## FOREWORD

The purpose of the QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY is to present promptly brief abstracts, noncritical in character, of the more significant articles in the periodical medical literature of Europe and the Americas.

For reader reference, the abstracts are classified under the following general headings:

### PSYCHIATRY

1. Administrative Psychiatry and Legal Aspects of Psychiatry
2. Alcoholism and Drug Addiction
3. Biochemical, Endocrinologic, and Metabolic Aspects
4. Clinical Psychiatry
5. Geriatrics
6. Heredity, Eugenics, and Constitution
7. Industrial Psychiatry
8. Psychiatry of Childhood
9. Psychiatry and General Medicine
10. Psychiatric Nursing, Social Work, and Mental Hygiene
11. Psychoanalysis
12. Psychologic Methods
13. Psychopathology
14. Treatment
  - a. General Psychiatric Therapy
  - b. Drug Therapies
  - c. Psychotherapy
  - d. The "Shock" Therapies

### NEUROLOGY

1. Clinical Neurology
2. Anatomy and Physiology of the Nervous System
3. Cerebrospinal Fluid
4. Convulsive Disorders
5. Degenerative Diseases of the Nervous System
6. Diseases and Injuries of the Spinal Cord and Peripheral Nerves
7. Electroencephalography
8. Head Injuries
9. Infectious and Toxic Diseases of the Nervous System
10. Intracranial Tumors
11. Neuropathology
12. Neuroradiology
13. Syphilis of the Nervous System
14. Treatment
15. Book Reviews
16. Notes and Announcements

In fields which are developing as rapidly as are psychiatry and neurology, it is obviously impossible to abstract *all* the articles published—nor would that be desirable, since some of them are of very limited interest or ephemeral in character. The Editorial Board endeavors to select those which appear to make a substantial contribution to psychiatric and neurologic knowledge and which promise to be of some general interest to the readers of the REVIEW. Some articles, highly specialized in character, or concerning a subject already dealt with in an abstract, may be referred to by title only at the end of the respective sections.

A section entitled INTERNATIONAL RECORD OF PSYCHIATRY AND NEUROLOGY is included at the beginning of the journal. The Record Section consists of advanced clinical and experimental reports.

The Psychiatry and Neurology Newsletter was compiled by Dr. Francis N. Waldrop.

The Editorial Board at all times welcomes the suggestions and criticisms of the readers of the REVIEW.

WINFRED OVERHOLSER, M.D.  
*Editor-in-Chief*







# Psychiatry and Neurology

## NEWSLETTER

SMITH, KLINE & FRENCH FOUNDATION FELLOWSHIPS: The American Psychiatric Association has received a grant of \$100,000 from the Smith, Kline & French Foundation to continue the Foundation Fellowships in psychiatry from 1958 to 1960. More than 150 medical students and physicians have received aid through these APA-administered fellowships since they were first offered in 1955. Applications to be considered in May and October must be submitted to the Fellowship Committee by April 1 and September 15 of each year. For further information, write to the Committee, Box 7929, Philadelphia, Pa. A grant of \$10,000 to the Academy of Religion and Mental Health has also been authorized by the Foundation to provide fellowships for theological students and clergymen who wish to become mental hospital chaplains.

TRANSLATIONS OF SOVIET SCIENTIFIC LITERATURE: The Pergamon Institute, a nonprofit foundation, has been formed to make the results of scientific, technological, and medical developments in the U. S. S. R. and its satellites available to English-speaking groups and individuals. The Institute will supply without charge to scientists, doctors, engineers, learned societies, trade associations, or government departments a monthly list of significant current books and articles in their particular fields of interest. English translations may be ordered on a cost-sharing basis. The Institute also plans to publish specialized dictionaries, to encourage the teaching of Russian to non-Russian-speaking scientists, and to serve as a forum for discussion of problems common to Russian and non-Russian scientists. The address of the Pergamon Institute is 122 East 55th Street, New York 22, N. Y.

THE NATIONAL COUNCIL ON FAMILY RELATIONS: Eugene, Ore., will be the site of the annual meeting of the NCFR, to take place August 20 to 23, 1958. Among the topics for general sessions are: "Today's Family in 1978"; "Measurement of Marital Satisfaction"; and "Personal Values, Professional Ideologies, and Family Specialists." Panel and discussion group meetings will also be held. For additional information, write: NCFR Annual Conference, Dr. Theodore B. Joannis, Jr., University of Oregon, Eugene, Ore.

CONSULTANTS ON NIMH RESEARCH: Appointment of a six member panel of nongovernmental experts to serve as consultants to the National Institute of Mental Health in its research program has been announced by the U. S. Department of Health, Education and Welfare. The panel is to be called the Board of Scientific Counsellors of the National Institute of Mental Health. Members are: Dr. Horace W. Magoun, Professor of Anatomy, University of California Medical Center; Dr. John Benjamin, Child Research Council, School of Medicine, University of Colorado; Dr. Stanley Cobb, Bullard Professor Emeritus, Neuropathology, School of Medicine, Harvard University; Dr. Jordi Folch-Pi, Director of Scientific Research, McLean Hospital, Waverly, Mass.; Dr. Robert F. Bales, Associate Professor of Social Relations, Harvard University; Dr. Neal E. Miller, Angell Professor of Psychology, Yale Institute of Human Relations. Representatives of both clinical and fundamental sciences will be included in the Board membership at all times. The term of membership is four years; the initial appointments, however, will expire at staggered intervals, to set up a rotation of tenure. The panel, in addition to its review of the NIMH research activities carried on at Bethesda, Md., and various field stations, will provide to the director of the Institute its views on long-range perspectives of intramural research.

SOCIETY FOR THE SCIENTIFIC STUDY OF SEX: The first annual meeting of the Society will be held in New York City, at the Barbizon Plaza Hotel, November 8, 1958. For further information, write: Robert V. Sherwin, 1 East 42nd Street, New York 17, N. Y.

THE ASSOCIATION FOR RESEARCH IN NERVOUS AND MENTAL DISEASE: The Association's annual meeting is scheduled for December 12 and 13, 1958, at the Hotel Roosevelt, New York City. "Neuromuscular Disorders" will be the subject of the meeting. Dr. Lee M. Eaton, Rochester, Minn., is the presiding president.

THE SOCIETY FOR THE SCIENTIFIC STUDY OF RELIGION: The fall meeting of the Society will be held on November 1, 1958, at Harvard University. Social scientists are invited to submit papers relating to the social or social-psychological functions of religion for possible presentation at the meeting. Papers, or 300-word abstracts thereof, should be sent before August 30 to Theodore W. Sprague, 13 Follen Street, Cambridge 38, Mass.





# QUARTERLY REVIEW OF PSYCHIATRY AND NEUROLOGY

\*

## ABSTRACTS

### psychiatry

#### ADMINISTRATIVE PSYCHIATRY AND LEGAL ASPECTS OF PSYCHIATRY

81. *The Future of the Public Mental Hospital.* ADDISON M. DUVAL. *Ment. Health Virginia* 8:5-7, 1958.

In discussing the future of the public mental hospital, the author begins by making several assumptions: (1) The need for mental hospital care will increase as both the general population and the span of life increase. (2) Not enough money will be available to do the ideal job as we now understand it. (3) Qualified professional workers will still be scarce. (4) Further developments in drug therapy will not materially alter basic treatment methods now used. (5) Psychiatrists will still superintend the hospitals.

Mental illness in an older and less vigorous population will be an even greater public health problem than at present. The author says the future public mental hospital will be made up of three patient groups: Geriatric patients, younger long-term-care patients, and acute patients. Innovations will provide such things as variheight beds, electric wheel chairs and body lifts, and conveyor-belt tray service. The emphasis in the geriatric service will be on lessening discomfort and pain and providing more tolerable existence. The principal emphasis will be on nursing service. Few psychiatrists will be needed. Some of the expense of hospitalization will be borne by sickness insurance and by Social Security payments. Care must be taken so that the standards of treatment will not deteriorate. The author predicts that the younger long-term-care patients will live in specifically planned small groups, and that they will largely look after themselves. Either a nurse or a housekeeper will have supervisory control. Some of these patients will move from the hospital to family care programs in the community as their mental condition permits. The most active section of the hospital will be used for newly admitted patients. The average length of stay will

volume xix, number 3, September, 1958

be between that of the psychiatric unit in the general hospital and the long-term-care public hospital. A multidisciplinary treatment approach will be continued, with the roles of the staff specifically delineated. The sociologist will assist in setting up the ward social structure. Employees will be selected for their specific roles in therapy. New researches in psychotherapy, brain metabolism, psychopharmacology, and sociology will produce a new era in psychiatric therapy. Psychiatry will have become a more exact science, with its roots reaching deep into medicine. In conclusion, the author urges careful, long-term planning for all public mental hospitals.—*Author's abstract.*

82. *The Treated Sex Offender.* LOUISE V. FRISBIE, Atascadero, Calif. Federal Probation 12:18-24, March, 1958.

California's Atascadero State Hospital is a unique state institution providing psychiatric treatment for sane male patients convicted of sex offenses and committed for observation and treatment on an indeterminate basis. Systematic follow-up on patients ultimately returned to the committing court and awarded probation provides data on recidivism (7 per cent) and the extent of social adjustment in selected areas. The article describes the legal background; the focus of multidiscipline therapy, and the emotional forces moving the patient at point of discharge. The need for counseling by a probation officer, particularly during reintegration into society, is clear. Noted features on recidivism are offered, and it is predicted that the psychiatrically treated sex offender will function as a happier, more productive member of society because of the guidance given him.—*Author's abstract.*

## ALCOHOLISM AND DRUG ADDICTION

83. *Delirium Tremens. Reduction of Mortality and Morbidity with Promazine.* FRANCESCO A. FIGURELLI, Jersey City, N. J. J. A. M. A. 166:747-750, Feb. 15, 1958.

Delirium tremens, one of the most critical complications of the alcoholic debauch, has been considered to be an abstinence psychosis for decades. Gradual withdrawal of alcohol, therefore, has been advocated as a therapeutic measure to prevent development of the syndrome after severe and prolonged inebriation. In an effort to explore the problem further, 180 patients suffering from delirium tremens were treated at the Jersey City Medical Center in 1956. In 173, the onset occurred while the patient was actively drinking; in 7, it occurred 1 to 48 hours after admission to the hospital. Treatment in uncomplicated cases consisted of the complete withdrawal of alcohol and the administration of promazine hydrochloride. The treatment ultimately adopted consisted of an initial intramuscular injection of 200 or 300 mg., a second injection of 100 mg. within four hours or less, and oral administration of 100 mg. four times a day for maintenance thereafter. The death rate in delirium tremens with conventional treatment was 10 per cent. The over-all mortality with promazine treatment, both oral and parenteral and in all dosages, was 4.5 per cent. After the practice was started of giving large parenteral doses initially and large oral maintenance doses, the mortality fell to 0.6 per cent. From July 16 to Nov. 5, 1956, there were 87 consecutive admissions with no deaths. It was found that medication with promazine results in more rapid control of the delirium, eliminates the prolonged and expensive therapeutic

measures formerly required, simplifies the duties of ward personnel, reduces the hospital stay, and permits earlier return of the patient to gainful occupation.—*Author's abstract.*

84. *The Use of Methylphenidate (Ritalin) Hydrochloride in Alcoholism. Preliminary Report on its Diagnostic and Therapeutic Use.* DIETRICH HARTERT AND ALBERT N. BROWNE-MAYERS, Princeton, N. J. J. A. M. A. 166:1982-1985, April 19, 1958.

Methylphenidate is a new central nervous system stimulant that produces an increase in alertness and coordinated psychomotor activity when given in therapeutic doses and in tablet form (5 to 10 mg.). It tends to alleviate fatigue and mild depression, as do caffeine and the amphetamines, and produces a mild increase in blood pressure, pulse rate, and respiration. The specific action of large intravenous doses (20 to 40 mg.) was first noted during a series of tests intended to determine the effect of methylphenidate upon electroencephalographic tracings. The persons undergoing the tests became unusually talkative and moderately euphoric without showing the "drunkenness," drowsiness, or exaggerated euphoria characteristic of sodium amobarbital, alcohol, or the amphetamines, respectively. These effects were therefore further investigated in a series of tests with 7 patients hospitalized for alcoholism, in order to determine whether methylphenidate would prove to be useful in diagnostic and therapeutic procedures with alcoholics, who are notoriously inaccessible because of their strong defense mechanisms, lack of insight, motivation, etc. The results were felt to be encouraging. Most of the patients verbalized a great deal of emotionally significant material while displaying enhanced introspection and critical self-evaluation with undisturbed reality testing. Their mood was moderately euphoric mixed with varying degrees of anxiety and tension, and they had a feeling of increased physical strength. The effects of the drug lasted for several hours and terminated in each case without undue after-effects. Follow-up psychotherapy appeared to encounter better motivation and less resistance. 3 references. 1 figure.—*Author's abstract.*

## BIOCHEMICAL, ENDOCRINOLOGIC, AND METABOLIC ASPECTS

85. *Pupil Dilatation in Normal and Schizophrenic Subjects Following Lysergic Acid Diethylamide Ingestion.* HARRY FREEMAN, Worcester, Mass. A. M. A. Arch. Neurol. & Psychiat. 79:341-344, March, 1958.

Since clinical observations indicate that schizophrenic patients require higher doses of lysergic acid diethylamide to produce psychologic disturbances than do normal subjects, this study was made to determine whether the absorption of LSD-25 into the central nervous system of such patients, as measured by the degree of pupillary dilatation, differs from that of normal subjects. LSD-25 constantly results in pupillary dilatation due to its central stimulation of the mesencephalon and the medullary center. The pupils of 10 normal and 10 chronic schizophrenic men, each of whom had ingested 75 gamma of LSD-25, were photographed (in color) at intervals over a two hour period. Although the normal subjects exhibited far greater psychologic disturbance than the patients, the average amount of pupillary dilatation was the same in both groups. This finding indicates that the lesser psychologic responsivity of the schizophrenic patients is not due to inadequate absorption



of the material into the central nervous system, and that autonomic and psychologic responses vary independently of each other. 12 references. 2 figures. 1 table.—*Author's abstract.*

## CLINICAL PSYCHIATRY

86. *Dementia Praecox and Schizophrenia.* H. BARUK. *Ann. méd.-psychol.* 2:625-662, Nov., 1957.

The dementia praecox of Kraepelin cannot now be considered to be a true disease. The principal characteristic of dementia praecox is the tendency toward dementia. The statistical and clinical study of 100 patients for more than 20 years shows that a substantial proportion of them diagnosed as having dementia praecox were cured completely and afterward led a normal life. Moreover, there is a false schizophrenia, that is, reactive depression without true deficiency in the personality. The diagnosis of dementia praecox or schizophrenia is a very dangerous one, for this diagnosis results in a bad psychological reaction on the patient and on his family. It is what has been called a "destructive prognosis." Also, many cases of periodic diseases have the appearance of dementia praecox. There is also a "periodic catatonia" (Claud and Baruk, Gjessing). The author considers that Bleuler's schizophrenia is not an illness, and that the dementia praecox of Kraepelin must disappear. Schizophrenia is only a "psychopathological process" that can be observed in different cases and without a definite prognosis. Thirty years ago, the author studied the difficulties of "psychomotor initiative," that is, the initial impulse for movement, the decision to move. He began in 1926, with Thévenard, to make electromyographic studies in catatonia and to undertake physiological research (electrocardiographic and others). In 1928 to 1930, with de Jong, he produced for the first time experimental catatonia in animals with bulbocapnine. Later he produced catatonia with the neurotoxin of *Escherichia coli*; with Camus, he brought catatonia about in animals with the bile of duodenal tubage from catatonic patients; and still later with ACTH and neuroleptic drugs (Launay and Bergès). He emphasizes the toxic nature of the schizophrenic process, with especial reference to the role of the liver and intestines.—*Author's abstract.*

87. *Bias in Psychotherapists of Different Orientations. An Exploratory Study.* MARTIN LAKIN AND B. LEOVITS, Chicago, Ill. *Am. J. Psychotherapy.* 12:79-86, Jan., 1958.

An experiment was designed to study the influence of psychotherapists' orientations upon conceptualization of a patient when only minimal identifying information was provided. Seventeen psychotherapists representing three different "schools," psychoanalytic, eclectic, and client-centered, served as subjects for the study and "free associated" to the question: "As a psychotherapist, how would you think about this person?" Therapists' associations were compared in terms of modes of speculation and in terms of selective emphasis. Psychoanalysts tended to be far more speculative than either of the other groups. Their associations emphasized early childhood experiences and contrasted with those of client-centered therapists, who were more concerned with the effects of recent trauma. The effort to be empathic was marked among the latter. Eclectic therapists ventured only very general evaluations

of the patient. Speculations relevant to therapeutic potential or procedures were obtained from analysts and from client-centered therapists but not from the eclectics. Extremes of difference in conceptualization mode and resultant were noted among these groups. How these affect therapy is not yet understood. Further comparative investigation of predisposing "sets" or "biases" originating in therapist orientation is necessary to an understanding of the psychotherapeutic process. 11 references. 3 tables.—*Author's abstract.*

88. *A Criterion for Chronicity in Schizophrenia.* JAMES DRASGOW, Buffalo, N. Y. *Psychiatric Quart.* 31:454-457, July, 1957.

Lobotomies, lobectomies, shock treatment, and adjunct complications associated with deterioration are considered in connection with the need for a criterion of chronicity in schizophrenia. Two research surveys revealed that the length of time of hospitalization was a generally acceptable criterion, but that there was no agreement upon how much time was necessary. The discharge and readmission rates from two samples of acute schizophrenics were mathematically and statistically analyzed with respect to frequency of cases and times of discharge; after 3 years of hospitalization the discharge percentage was so small that the remaining patients could be considered chronic. 4 references. 1 table.—*Author's abstract.*

89. *Of Schizophrenia and the Schizophrenic.* VERNON KINROSS-WRIGHT AND EUGEN KAHN, Houston, Texas. *Am. J. Psychiat.* 114:703-706, Feb., 1958.

The essence of schizophrenia, clinically speaking, is to be sought in schizophrenia simplex. It is manifested primarily in the affective change and the disturbance of thinking, due presumably to biological alterations of which we are ignorant at the present time. Schizophrenia, the disease, is built up of symptoms; it is diagnosed. On the other hand, the schizophrenic person is recognized through his attitudes, his unusual, bizarre, twisted manners, and his odd oral expressions and special ways of experiencing his own peculiar world. The strangeness of the schizophrenic's world easily passes unnoticed, since the "outsider" cannot enter. The essence of the schizophrenic person may be seen in an increasing passivity that is often preceded by panicky preoccupations of various kinds. Schizophrenia is not a way of experiencing or a way of existence (*Daseinsweise*) but a nosological concept. It was formulated by the use of clinical, nosological methods. It may be further investigated with methods of scientific research from the clinical to the biochemical. The experiences and the way of existence of the schizophrenic person may be approached psychologically and/or sociologically, and, with discrimination, philosophically. The separation of schizophrenia from the schizophrenic is anything but artificial. In fact, we are dealing with two different topics and with different approaches. The physician is not an unchangeable figure in the relationship that develops during the therapeutic procedure. He must become aware of changes in himself and in his patient and in the patient's concern for these changes. Recognition of this appears to be one of the notable advances since the culmination of the clinical period. Description alone does not suffice; an increasingly keen awareness of the dynamics, using the word in the very broadest and nondogmatic sense, is always needed. This progress, vital as it is, could not have been accomplished without the foundations of clinical psychiatry laid down by Kraepelin.—*Author's abstract.*

90. *The Concepts of Bleuler. Approach to Phenomenologic Analyses.* E. MINKOWSKI, Paris, France. *Ann. méd-psychol.* 2:833-844, Dec., 1957.

Bleuler termed himself an associationist. It was associations that constituted for him the first manifestations of schizophrenia. At the same time he introduced concepts such as splitting, autism, and good and poor contact with the environment. He subordinated these concepts to the primitive disorder of association only in theory; they fell into perspective in another dimension. Bleuler himself indicated this by insisting that one feels more than one describes these disorders. The ideas of autism and of contact with reality concern the whole person; they have an "anthropological" character. Thus they have served as a means of access to the later research that is to be found in contemporary philosophy. This research does not operate to the detriment of the clinical; rather, it concerns the human being and permits us to disclose a new aspect of mental disorders.—*Author's abstract.*

## GERIATRICS

91. *Admissions of Geriatric Cases to a Mental Hospital.* JOSEPH HORBACZEWSKI, Weyburn, Saskatchewan, Canada. *Canad. M. A. J.* 78:22-27, Jan. 1, 1958.

Constant increase of the number of aged people calls for a special geriatric program on a national scale. Many of the aged are poor and in need of medical and social care. The Medical and Welfare Services alone cannot be expected to deal satisfactorily with all the aspects of the problem. Neither are the existing facilities in the general hospitals nor the training of nurses designed for the chronically ill and often alienated and poor geriatric patients. In the absence of hospitals for the chronically ill and incapacitated, many geriatric cases are sent to mental hospitals as a matter of expediency rather than necessity. A survey of 281 admissions of these cases to a mental hospital revealed that two-thirds had no evidence of mental illness but required medical and surgical treatment, or were crippled, incurable, and required terminal care for neoplastic disease or for advanced debilitated states. They were committed on the grounds that they were delirious and incapacitated as a result of a grave physical condition or were mildly confused, irascible, and demented due to old age, and had no interested relatives. The delirium was often misdiagnosed as psychosis, and the underlying physical conditions (such as cerebrovascular accident, heart failure, and uremia due to a variety of causes) remained unrecognized or underestimated. Only one third of the admissions presented clear-cut psychoses. The practice of sending this kind of patient to a mental hospital should be considered a disservice to the community; it conceals the necessity of a better solution of geriatric problems, invalidates the statistics for mental patients, and consumes the limited resources and energy of mental hospitals, which should be devoted to the treatment of mentally ill patients. 3 references. 1 table.—*Author's abstract.*

92. *The Use of Perphenazine (Trilafon) to Control Anxiety and Agitation in Aged Patients.* EDWARD SETTEL, Brooklyn, N. Y. *J. Am. Geriatrics Soc.* 5:1003-1008, Dec., 1957.

Perphenazine was administered to 60 patients exhibiting combined symptoms of anxiety and agitation. Their ages ranged from 60 to 93 years. Twenty-four of the 60 were ambulatory and received a low dosage schedule of 12 to 16 mg. daily; 36 were institutionalized for

custodial care and were administered the higher dosage regimen of 24 to 48 mg. daily. The average duration of therapy was 16 weeks. Good to excellent results were achieved in 85 per cent of the patients. The effects were best in moderate and severe senile agitation and in anxiety with tensions or anxiety with depression. The effects were poor in 4 patients exhibiting anxiety associated with terminal carcinoma; however, the antiemetic properties of the drug were excellent in those of this group who were vomiting. Side effects occurred in 5 patients and consisted mainly of lassitude, fatigue, drowsiness, and vertigo. They were reversed in 4 of the 5 by reduction of dosage and/or antiparkinsonian drugs. Perphenazine appears to be a safe and valuable agent for the control of geriatric agitation. Its outstanding characteristics are flexibility and broad range of dosage. It can be utilized for the entire spectrum of geriatric agitation from mild anxiety to the more serious forms of senile psychoses. 14 references. 1 figure. 1 table.—*Author's abstract.*

93. *The Influence of Antibiotics on Aged Mental Patients.* J. A. SMITH, E. MANSFIELD, AND C. L. WITTON, Omaha, Nebr. *Geriatrics* 12:709-710, Dec., 1957.

To determine whether antibiotics had observable effects on the appetite, behavior, or mood of elderly patients with a chronic brain syndrome, oxytetracycline and tetracycline were administered, each for a six week period, to 25 members of a group of 50 senile patients whose average age was 75 years and whose average time in the hospital was 10 years. Half of the group received a placebo that was identical in appearance to the antibiotic being given. The dosage schedule was as follows: 250 mg. daily for the first two weeks, increased by 250 mg./day at the end of each two week period. During the final week, the treated patients received 750 mg. per day. The patients were interviewed in detail before administration of the antibiotic or placebo, and the results were recorded on a standardized form. Weekly progress notes were made, and the detailed interview was repeated at the termination of the project. The patients were weighed weekly. The project was conducted as a double blind procedure, and the staff member interviewing the patients was not aware which patients were receiving the antibiotic and which the placebo. No significant changes in behavior, mood, appetite, or weight were observed in the group receiving oxytetracycline and tetracycline. Diarrhea developed in 2 of the patients receiving the antibiotic, and they were dropped from the study. Conjunctivitis developed in 1 patient, and an external otitis in another during the course of the study; both were receiving the placebo. 7 references.—*Author's abstract.*

94. *Thoughts on the Problem of Aged Persons Suffering from Mental Disorders.* E. BRUYNINCKX, Tournai, Belgium. *Acta neurol. et psychiat. belg.* 57:537-550, July, 1957.

The art of nervous and mental medicine has covered more ground since 1850 than it had done from the time of Hippocrates to 1850. Psychiatry, notwithstanding certain appearances, will always remain bound to the art of medicine, from which it will draw its creative energy in its march toward progress. The author remarks on the extension of the average span of human life and on the regular increase in the number of patients more than 60 years of age admitted to psychiatric institutions. The assistance required by these patients gives rise to various problems, the more so as it becomes more and more evident that the special

techniques applied in psychiatry during recent years makes possible the readaptation to, and the taking up into, society of an ever-increasing number of such patients. He considers, on the one hand, the material aspect of the psychiatric institution of the future and the creation of day hospitals and, on the other hand, the organization and the therapeutic functioning of such establishments. Among others, he contemplates the collaboration that should exist between psychiatrists, psychologists, and other specialists, as well as the forming of the paramedical staff within the frame of nursing reform. Taking these considerations into account, the author concludes by expressing the hope that it will be possible to obtain, as early as possible, and to the largest extent possible, the opinion of experts of the World Health Organization, and to assure utmost efficiency in the reclassifying of patients and particularly of aged persons entrusted to institutions.

## PSYCHIATRY OF CHILDHOOD

95. *Mental Deficiency. Recessive Transmission to All Children by Parents Similarly Affected.* A. S. DEKABAN, Bethesda, Md. A. M. A. Arch. Neurol. & Psychiat. 79:123-131, Feb., 1958.

Present-day classification of mental deficiency is briefly discussed. The description of an interesting family is given in which both parents and their three children are mental defectives of an undifferentiated type. Paternal and maternal grandparents were of normal intelligence, but one of the paternal siblings was also a mental defective. Comprehensive clinical investigation, as well as biochemical, serological, and other special testing, does not reveal any evidence of a gross developmental anomaly, infection, known metabolic disorder, or destructive lesion of the central nervous system in the patients studied. Analysis of the pedigree of this family is compatible with autosomal recessive inheritance of an abnormal trait in a homozygous combination. It is suggested that the accumulation of pedigrees of a similar nature, when both parents are affected, may be found fruitful in investigation of the undifferentiated mental deficiency of various types. 9 references. 5 figures.—*Author's abstract.*

## PSYCHIATRY AND GENERAL MEDICINE

96. *Characteristic Personality Patterns Seen in General Practice.* HENRY W. BROSIN, Pittsburgh, Pa. Post-Grad. M. J. 23:1-6, Jan., 1958.

In order to help their patients recover from a disability, all practicing physicians must ask themselves, "How is this patient sick?" In many patients, the pathogenesis and the effective methods of treatment are relatively obvious, whether the disorder is an infectious disease, a new growth, or a depressive state caused by a severe disappointment. In a case in which the patient's personality strongly colors the clinical picture, careful physical and psychiatric examinations are required in order to make a sound diagnosis and to determine a plan for treatment. In puzzling cases, much patience and time are needed to accumulate the data required to make a sound judgment, even though most of us prefer to treat patients as effectively and as economically as possible. First, one must take all reasonable steps, without unduly prolonging the exploratory phase, to be sure that the patient does not have

an organic disease. Second, one must find positive evidence of neurotic processes and not depend merely on diagnosis by exclusion. It is worth while for the general practitioner to learn to differentiate common neuroses from mild psychoses and difficult character disorders in order to start appropriate treatment early, and thereby avoid disappointment. The dangers of using some ataraxics in doses beyond the safety level in such diseases as peptic ulcer, ulcerative colitis, or depressive states is described. Some neurotic motivations in accident-proneness, compulsive activity, and several examples of masked depressions or depressive equivalents, such as alcoholism, obesity, and polysurgery, are summarized with some suggestions for treatment. 14 references.—*Author's abstract.*

97. *Psychiatry in the General Hospital Today.* HAROLD G. SLEEPER, Oklahoma City, Okla. South. M. J. 51:312-314, March, 1958.

Care of the hospitalized psychiatric patient presents problems that in the past have often caused the general hospital to avoid accepting such patients. However, with increasing understanding of the nature of these problems and with increasing cooperation between physicians and hospital administrators, these problems are capable of solution. The use of existing hospital rooms proves to be practical in selected psychiatric cases. The increase in the number of psychiatric wards in general hospitals during the last few years is an indication of the recognition of the need to meet the problem of psychiatric illness in the community where it arises. Adequate consultation service for evaluation of psychiatric problems in general hospital patients is one way of increasing the understanding of these problems and establishing a constructive approach toward them. The patient today expects diversified medical and surgical services from his local hospital. He also expects adequate psychiatric care, and this expectation is being met with increasing effectiveness.—*Author's abstract.*

98. *Drug-Induced Depression—Fact or Fallacy.* FRANK J. AYD, Baltimore, Md. New York State J. Med. 58(3):354-356, Feb., 1958.

Between July, 1954, and July, 1956, family physicians and internists referred 70 patients (ages 40 to 70) for treatment of a presumed drug-induced depression due to chlorpromazine, rauwolfia, or reserpine prescribed for 43 as an antihypertensive and for 27 for psychiatric reasons. The duration of treatment before overt depressive symptoms appeared was from three months to two years. Because 23 of these patients did not have the usual signs and symptoms of an endogenous depression, they were labeled pseudodepressive due to excessive tranquilization resulting from too large a dose for the individual. They complained of being languid and discouraged because their lassitude and enervation interfered with the maintenance of their self-imposed standards. They had few, if any, symptoms, such as anorexia, weight loss, or insomnia. They were not ruminative, nor obsessed with phobias of physical or mental illness, nor were they self-depreciatory, remorseful, or troubled with morbid thoughts. Not one mentioned transient suicidal ideas. Few cried, but all complained of psychomotor retardation. These patients promptly recovered from their so-called depressed state when the dosage of the drug was reduced and a stimulant or an antiparkinsonism drug was added to their medication. Managed in this way, everyone continued his treatment with the same ataraxic for as long as three years without further spurious signs



of depression. In contrast to the pseudodepressed patients, the other 47 manifested some or all of the following symptoms of an endogenous depression: headache, dizziness, blurred vision, chest pain, dyspnea, palpitation, anorexia, weight loss, abdominal discomfort, constipation, urinary frequency, muscular aches and pains, insomnia, early morning awakening, depressed mood, crying spells, hopelessness, anxiety attacks, obsessive fears of physical ailments or impending insanity, impaired concentration, loss of interest in usual activities, and suicidal tendencies. There was no correlation between the dosage and the depression nor, in the hypertensive patients, between the drug's hypotensive effect and the depression. As many patients were on low doses of reserpine (0.5 mg. daily or less) as were on doses in excess of 1 mg. daily. Although 8 per cent of the pseudodepressed patients had a history of prior psychiatric care, 83 per cent of the endogenous depressives previously had received some form of psychiatric treatment. This correlates well with the reports in the literature that show that two thirds of the cases of drug-induced depression have a significant previous history of depression as well as a basically obsessional personality make-up. A recheck on the status of these 47 patients on September 1, 1957, revealed that 4 had died, 43 had recovered from their depression, and 12 of the recovered had had another depression of sufficient severity to require treatment, even though not one was taking an ataraxic immediately before or at the time of the current depression. Ten hypertensives are on a lower dose of the same ataraxic they were taking at the time they developed their presumed drug induced depression. The length of time the patients had been on ataraxics before their depression became obvious casts doubt on the etiologic role of the drug in the depression. If it assumed that the patient was depressed at the time the drug was started, and such was the case for most of the patients surveyed, then time and the natural course of the depression alone could account for its symptoms becoming more overt in three months to two years. Considering the large number of patients who have been treated with small to large doses of chlorpromazine and reserpine alone for as long as three to four years without becoming depressed, it is difficult to conclude that these drugs and other ataraxics are depressive. The fact that some depressed patients are treated with chlorpromazine or reserpine to control their agitation and ultimately recover from their depression is further evidence that these drugs are not truly depressive. Hence, there is a need for greater diagnostic accuracy before treatment with an ataraxic for hypertension or psychiatric reasons is instituted. Careful consideration must be given to the patient's past history, personality make-up, and present illness before an ataraxic is prescribed.—*Author's abstract.*

## PSYCHIATRIC NURSING, SOCIAL WORK, AND MENTAL HYGIENE

99. *A Follow-up Study of 255 Patients with Acute Schizophrenia and Schizophreniform Psychoses.* R. HOLMBOE AND C. ASTRUP, Oslo, Norway. *Acta psychiat. et neurol. scandinav.* 32:1-61, Suppl. 115, 1957.

During the summer of 1956, 255 patients with schizophrenic symptoms treated in Gaustad Hospital between 1938 and 1950 were followed up. For all cases, the symptoms had appeared less than half a year before admission. The material includes 132 men and 123 women. The authors personally re-examined 183 cases. For 43 patients in public care, information was obtained from the doctors who had been observing the patients. Concerning 29 patients,



among whom 10 were dead, information was obtained by letters. Two hundred and thirty-one patients had received convulsive treatment; 33, insulin coma; and 30, prefrontal lobotomy. Thirty-eight per cent were found to be recovered, 20 per cent improved, and 20 per cent slightly and 22 per cent severely deteriorated; 33 per cent were in need of public care. Really acute onset, especially with clearly exogenic precipitating factors, gives the best prognosis. In cases with atypical schizophreniform pictures with confusion, depression, or excitation, the prognosis was significantly better than for the remaining nuclear group of schizophrenia. Among other factors positively correlated with a poor prognosis can be mentioned: Schizoid prepsychotic personality, low intelligence, hebephrenic syndrome, negativism, affective blunting, delusions of phantasy lover or exalted descent, passivity feelings, and haptic hallucinations. An analysis of the massivity of schizophrenic symptomatology showed in general a positive correlation between the massivity and a poor prognosis. In psychoses with "typical schizophrenic symptoms," there is always a risk of schizophrenic deterioration, although a great percentage is recovered. Only psychoses without these symptoms, which seldom if ever end in schizophrenic defect, can safely be classified as nonschizophrenic. 67 references. 26 tables.—*Author's abstract.*

100. *Organic and Organizational Aspects of School Adjustment Problems.* HOMER F. WEIR AND R. L. ANDERSON, Rockford, Ill. J. A. M. A. 166:1708-1710, April 5, 1958.

The statistics of a public school system showed that 5 per cent of the children failed in a given year. In some instances no reason could be found for the difficulty, but in general there was a preponderance of birth injuries or severe postnatal infectious disorders, such as encephalitis, or severe cerebral episodes connected with the acute exanthemas or postnatal trauma. Pediatric and psychiatric examination revealed a fairly common picture of hyperactivity, excessive pressure of speech, insecurity and anxiety, immaturity of reaction, and fright in the examining situation. Electroencephalographic and neurological evidence of brain damage was found in a large percentage of 181 children so examined. After thorough individual evaluations, a systematic study was made of the effects of treatment, which consisted of psychotherapy for both child and parents, specific speech and reading therapy, and the use of certain drugs. Rauwolfia, reserpine, certain anticonvulsants, and a placebo were used in four groups of 69, 102, 44, and 31 children respectively. The best results, under the conditions of the experiment, were obtained with rauwolfia, which gave improvement in 63 (91 per cent) of the 69 children, but it is emphasized that the drug therapy alone was not responsible for the total improvement. Many children who now fail constantly in school can be saved for society if coordination can be achieved by interested parties in the community. The private physician should become a leader in undertakings of this kind. 3 references. 2 tables.—*Author's abstract.*

101. *Social Rehabilitation for Mental Patients.* MARY B. PALMER, Boston, Mass. Ment. Hyg. 42:24-28, Jan., 1958.

For many patients the day of discharge from a mental hospital is not a joyous homecoming but the beginning of an isolation more complete than that in the hospital they have left. To meet the need of this kind of patient, clubs have been springing up all over the country

in the last few years. Some of these also specialize in outpatients or include them as members. A recent survey made by the Massachusetts Mental Health Center reveals that there are at least 24 independent groups, not including Recovery Incorporated with its headquarters in Chicago and about 180 loosely affiliated branches in 20 states. Although some clubs include therapy groups and vocational help and mental health education for both their members and the public, most focus on recreation. The club offers members a chance to develop social confidence in company with others who have similar problems in an environment where they will not be shunned, ridiculed, or pitied. However, the club movement is young and rather fragile. No national organization exists comparable to Alcoholics Anonymous, although Recovery Incorporated, which goes beyond socialization to offer a kind of self-help system somewhat similar to that of Alcoholics Anonymous, appears to be growing steadily. Carrying the club idea a step further are the "half-way houses" in which expatients without suitable homes can live until they are ready to establish a place of their own. Usually they are expected to take jobs in the community, but policies are flexible and periods of unemployment tolerated. Three such hostels now are fairly well established in this country.—*Author's abstract.*

## PSYCHOPATHOLOGY

102. *Various Etiologies of the Schizophrenic Syndrome.* DAVID A. FREEDMAN, New Orleans, La. *Dis. Nerv. System* 19:108-112, March, 1958.

In even the simplest of situations (e. g., bacterial infection) the precise definition of the etiology of a disease is a difficult matter. The absence of 100 per cent concurrence between the presence of a given pathogen and a resulting disease indicates that some other factor than the pathogen is involved in the etiology of the syndrome. Conversely, it is well recognized that a given syndrome can be induced by many different etiologic agencies. These considerations are of particular concern in the study of schizophrenia. Three patients are presented, each of whom has been diagnosed as suffering from schizophrenia by at least two psychiatrists. One individual proved to be myxedematous and was effectively treated with thyroid extract. Another suffered from seizures associated with a temporal lobe lesion. A syndrome diagnosed clinically as schizophrenia could be induced and remitted by modification of his anticonvulsant medication. The third patient presented a purely psychological problem relating to her primary identifications and the working out of her elementary dependent needs. When her confusion in these regards was clarified through psychotherapy, her psychotic symptoms went into remission. A review of the literature indicates that these three cases are in no way exceptional. No fewer than 39 etiologies have been proposed for schizophrenia. These cover nearly every known disease process. The impossibility of this state of affairs points, for the author, to the conclusion that schizophrenia is at best regarded as a symptom complex, expressive of the operation of a final common path that can be activated by many mechanisms, and in this sense should be considered in the same light as headache, epilepsy, a sore throat, and other symptoms of multiple possible causation. The unfortunate implication of a given disease which has grown up around the term, however, suggests further that the word "schizophrenia" would best be deleted from the vocabulary and given symptoms be described as such. 10 references.—*Author's abstract.*

103. *Hysteria, the Hysterical Personality and "Hysterical" Conversion.* PAUL CHODOFF AND H. LYONS, Washington, D. C. *Am. J. Psychiat.* 114:734-740, Feb., 1958.

The alterations of meaning of the term "hysteria" that have occurred during centuries of use have resulted in its present unclear and ambiguous position in psychiatric nosology. "Hysteria" is currently used in at least five different senses. This paper is primarily concerned with the hysterical personality and conversion hysteria. An attempt is made to establish usable criteria for the diagnosis of the hysterical personality by abstracting the qualities most frequently ascribed to it in a group of representative publications. "Hysteria" in the sense of the conversion reactions is then defined, and the relationship between these two concepts is discussed. The notion that conversion reactions occur only in individuals who also display the hysterical personality is shown to be a consequence of the historical development of the concepts. To test its validity, personality type diagnoses were made on a series of 17 patients with unequivocal conversion symptoms seen in the Veterans Administration Hospital in Washington, D. C., during the past two years. Of these only 3 were considered to have hysterical personalities, the others being diagnosed under a variety of other pathological personality type headings. This result confirms the impression that conversion reactions are a type of defensive operation available to different personality types and not one peculiar to the hysterical personality. It is suggested that apparently contradictory views about the occurrence of "hysteria" in men represent essentially a semantic distortion that can be resolved by avoiding the use of "hysteria" in the two different senses of the hysterical personality and the conversion reaction, since the latter is actually a defense reaction occurring in both sexes, whereas the former is a personality type far more common in women than in men. The reason why the hysterical personality occurs more often in women may be partly an outgrowth of the long-held belief that hysteria occurred only in women, so that the personality traits described as characteristic of it tended to be those more culturally acceptable in women than men, resulting in a picture that is almost a caricature of femininity, and that, if applied to men, would fit, for the most part, males who are passive homosexuals. —*Author's abstract.*

## TREATMENT

### a. General Psychiatric Therapy

104. *Treatment of the Chronic Paranoid Schizophrenic Patient.* D. EWEN CAMERON AND S. K. PANDE, Montreal, Canada. *Canad. M. A. J.* 78:92-96, Jan. 15, 1958.

The results of combined prolonged sleep and intensive electroshock treatment with subsequent rehabilitation and follow-up ambulant therapy in chronic paranoid schizophrenic patients have been presented. The authors' working theories are: (1) That schizophrenia represents a biological process that can be arrested by chemical and physical therapies (and also spontaneously) but that tends, particularly when of any intensity or duration, to leave permanent damage; (2) that recovery consists primarily in halting the process and a reorganization of the individual that results in a short-circuiting or inactivation of the damaged area but that does not result in an abolition of the established damage; (3) that a considerable proportion of schizophrenic relapses, though certainly not all, constitute

not a reactivation of the process but a breakdown of the reorganization of the individual, usually under emotional stress. The group reported upon consists of 16 chronic paranoid patients with symptoms of two or more years' duration, contrasted with a group of 10 paranoid schizophrenic patients with symptoms of less than two years' duration. Three of the long-term patients have been readmitted, and 2 of these have been subsequently discharged. One is still in hospital undergoing retreatment. The longest period of follow-up subsequent to discharge is two years. Two of the long-term patients have broken treatment and have again shown paranoid symptomatology, but remain outside the hospital. Minor relapses have occurred in several of the patients, in both the long-term and short-term, but these have been managed successfully on an ambulant basis. None of the short-term patients has had to be readmitted. In the long-term patients, some residual evidence of schizophrenia can be seen. This takes the form of reduction in drive and blunting of affect. In only 3 of the long-term patients (the 2 who broke therapy and the 1 who was readmitted and is still undergoing treatment) and in none of the short-term is there any evidence of paranoid thinking. The authors' primary purpose in this presentation is to show that therapeutic procedures have advanced to the point where it is now possible for schizophrenic patients, even when suffering from the most severe forms of the illness, to be passed through a phase of intensive treatment followed by long-term rehabilitation measures and thereby be enabled to live, and often work, outside the hospital. 5 references. 2 tables.—*Author's abstract.*

105. *Tranquillisers and Patient's Environment.* N. H. RATHOD, Surrey, England. *Lancet* 1:611-613, March 22, 1958.

This paper deals with an experiment carried out to test the possibility of excessive use of ataraxics and to examine the effects of improved ward environment. It was carried out in two wards for chronically disturbed women, each with a population of 90 to 100 patients. Most patients were suffering from psychoses, and 90 per cent had been hospitalized for over three years. Chlorpromazine and mepazine had been increasingly used in these wards since the end of 1954. Data about drug therapy, disturbed behavior, and improvement in the wards were collected from nurses' day reports from January, 1954. During the first year of treatment with ataraxics, the wards showed distinct improvement. During the second year, when more than 50 per cent of the patients were receiving these drugs as compared with less than 33 per cent during the first year, both the wards showed clear signs of deterioration instead of further improvement. In January, 1957, without the knowledge of nurses or patients, placebos were suddenly substituted for the drugs. Simultaneously, efforts were made to improve relationships between the nurses and patients by discussions, and to introduce intensive and varied occupational activities for the patients. Nurses in ward A cooperated fully. During the five months of the experiment, both wards showed signs of further improvement, ward A much more than ward B. At the end of June, 1957, all the placebos were withdrawn. This increased disturbed behavior. The results of the experiment suggest: (1) That the drugs mentioned have a limited effect and that their misuse is a genuine possibility; (2) that placebos, too, have a therapeutic effect; (3) that disturbed wards can be maintained at as tranquil a level as that achieved by ataraxics by improving the environment. 11 references. 1 table.—*Author's abstract.*

## b. Drug Therapies

106. *The Current Status of the Tranquillizing Drugs.* PHILIP L. KURTZ, Indianapolis, Ind. Canad. M. A. J. 78:209-215, Feb. 1, 1958.

Clinically, there are two major types of ataraxics, or agents that calm with minimal hypnotic action, those with and those without potent antipsychotic effects. The first type quiets violent psychotic patients and sometimes brings about their return to society. The second may prevent neurotic breakdown in anxious or tense patients under stress and may keep an acute neurosis from becoming chronic. A review of some 150 current articles and some unpublished data on clinical experiences with ataraxics was undertaken to determine what percentage of patients in different diagnostic categories have improved and what principal side effects have been reported. The ataraxics do not cure, but they do provide symptomatic relief and, as adjuncts, they are likely to displace but not entirely replace some of the older therapies. Thus, the severely depressed patient may still require insulin coma or electroconvulsive therapy. Psychotherapy remains an important tool, and these agents can probably increase its effectiveness by improving rapport with the patient. The efficacy of the various ataraxics depends greatly upon the care with which they are selected and prescribed, because their actions differ and patients may respond to one and not another. All things considered, the new drugs are safe and toxic reactions are rare. The numerous side effects are seldom dangerous and not more common than to be expected of pharmacologically active drugs. 119 references. 4 tables.—*Author's abstract.*

107. *Chlorpromazine in Treatment of Chronic Schizophrenia.* JULIAN ABRAMS, Sykesville, Md. Dis. Nerv. System 19:20-28, Jan., 1958.

The purpose of this investigation was to determine the effectiveness of chlorpromazine as a therapeutic agent in the treatment of chronic, hospitalized schizophrenic women. The study was concerned with changes that occurred in intellectual functioning, in the presence of anxiety and hostility, and in overt behavioral patterns as a result of treatment. Utilizing two groups of patients (a chlorpromazine group and a placebo group), the Wechsler-Bellevue Intelligence Scale, the Rorschach, and the Multidimensional Scale for Rating Psychiatric Patients were administered prior to treatment and then repeated four months later at the conclusion of treatment. Data obtained from the psychological tests and rating scale were subjected to small sample statistical techniques. The chlorpromazine group and the placebo group were each studied separately, and comparisons were made between the groups. The following conclusions were obtained: (1) Chlorpromazine is an effective therapeutic agent insofar as it enhances logical thinking, reduces the severity of symptomatology, and brings about improved patterns of overt behavior; (2) it has the effect of initiating a reversal of the schizophrenic process by penetrating the psychotic disorganization and by reorganization, but it has little influence on the withdrawn attitude of the patient; (3) it can produce greater inactivity and submissiveness so that the patient passively accepts the medication as treatment without active participation on his part, indicating a need for supplementary rehabilitative procedures; (4) it was not significantly more effective than a placebo in improving over-all intellectual functioning or in reducing the amount of anxiety

and hostility present in the patient. The use of a control (placebo) group for comparison purposes and the use of psychological tests and scales instead of reliance on clinical assessments of overt behavior tend to make for more objective, valid evaluations of chlorpromazine treatment. 23 references. 1 table.—*Author's abstract.*

108. *Rauwolfia serpentina in the Control of Anxiety.* PAUL LOWINGER, Detroit, Mich. *Psychiatric Quart.* 31:445-453, July, 1957.

This study is an evaluation of the usefulness of *Rauwolfia serpentina* in the control of overt anxiety in 113 patients of the psychiatric service of a general hospital in 1953 to 1955. The method compared a group of patients treated with the *R. serpentina* drugs to a matched control group of patients treated conventionally, that is, using sedatives or no medication. The rauwolfia drugs are equal to the conventional treatment of anxiety in effectiveness, since both techniques benefited 79 per cent of the patients. The results are analyzed by diagnostic groups and also by patient groups with different anxiety levels. Schizophrenic patients responded as often to rauwolfia medication as to the conventional treatment of their anxiety. No change in the psychopathology of schizophrenia or other illnesses was noted due to rauwolfia drugs. Three forms of rauwolfia gave the same results in the control of overt anxiety when used in the following proportions: 1 mg. reserpine; 5 mg. alseroxylon; 250 mg. whole crude root. A wide variety of minor toxic symptoms in the use of rauwolfia drugs was noted in 40 per cent of the patients, but they were easily controlled. Depressive symptoms were not caused or made worse by rauwolfia drugs given for less than 40 days. There is a discussion of details of the clinical use of rauwolfia drugs including dosage, duration, and toxicity. 14 references. 5 tables.—*Author's abstract.*

109. *Effects of a Tranquilizer (Reserpine) on Psychodynamic and Social Processes.* CHARLES SAVAGE AND J. DAY, Bethesda, Md. *A. M. A. Arch. Neurol. & Psychiat.* 79:590-596, May, 1958.

A study was made of the psychodynamics of the reserpine effect. Four chronic regressed schizophrenic patients were chosen. They had all been under close observation for two years and had received continuous intensive psychotherapy in a therapeutic setting with no change. After a two week period of control injections, they were given 5 mg. of reserpine intramuscularly daily. They showed sudden dramatic improvement. Not only was their hostility decreased and their assaultive behavior controlled, but they became concerned about other persons' reaction and made visible efforts at self-control. They were less preoccupied with themselves; they became more interested in other people and more friendly with them. They participated in group activities and group therapy. They talked more freely and rationally. The favorable effect of reserpine led to renewed interest on the part of the ward and therapists. Psychotherapy was more comfortable for both patient and doctor. It transformed a dysjunctive hour that both dreaded to one that both welcomed. Mutual anxiety was reduced. The content of the patients' speech became less concerned with their delusions and more with their daily living. The psychotic processes tended to appear more in dreams and less in waking life. However, the psychotherapeutic situation improved only in the sense that all social and interpersonal relations were better. In the sense of



therapy as a collaborative investigation into the patient's difficulties in living, psychotherapy was not facilitated. The patients avoided sensitive areas as effectively as they had before reserpine. Their improved functioning seemed predicated on a successful denial of their problems and avoidance of their difficulties. Eventually the patients reached a plateau that they were unable to transcend, and none became well enough to leave the hospital. Environmental stress was able to reverse the favorable effects of reserpine. After six months, reserpine was temporarily discontinued. The patients all relapsed to their former state. The improved interpersonal situation under reserpine had no lasting effect. The conclusion must be reached that, within the limits of this sample, despite dramatic psychological and social changes induced by reserpine it cannot be said to facilitate psychotherapy. 2 references.  
—*Author's abstract.*

### c. Psychotherapy

110. *The Essence of Mental Cure. The Manifold Principles Active in Psychotherapy.* JOOST A. M. MEERLOO, New York, N. Y. *Am. J. Psychotherapy* 12:42-63, Jan., 1958.

A survey is given of the manifold principles active in psychotherapy, since only a multiform approach to the problem of mental cure can provide a final understanding. Special attention is paid to the phenomena of spontaneous cure, the role of crisis in life, mass healings through faith, and the ambiguous concept of pseudocure. Among the principles mentioned the author emphasizes the process of autoregeneration, the ritualistic function of psychotherapy, the ambivalent action of awareness, the increase in tension tolerance, ego fortification through identification and discipline in the therapeutic process, the release through verbalization, the trial relation with the therapist, and especially the curative value of temporary retrogression. Transference and trial relation are looked upon as the most important parts of the psychotherapeutic process. They are not only determined by the unconscious prejudices of the patient but also by the therapist's unobtrusive communications. 15 references.  
—*Author's abstract.*

111. *Influence of Music upon Verbal Participation in Group Psychotherapy.* LEO SHATIN AND CARL ZIMET, Albany, N. Y. *Dis. Nerv. System* 19:66-72, Feb., 1958.

The influence of background music upon the quantity and quality of verbal interaction during group psychotherapy was studied. Three experimental conditions were employed in the design: quieting music, no music, and stimulating music. There were 52 sessions in all. Every verbalization was rated on a four-step scale, from positive and sympathetic at 1 to negative and hostile at 4. The group showed a consistent mean increase in frequency of verbalization, from quieting music to no music to stimulating music. The amount of silence was measured, and this was in the reverse order: more silence under quieting music, less under no music, and least under stimulating music. The reciprocal relationship of silence with participative frequency was logically consistent. The group's quality of participation under the three conditions was measured by the relative frequencies observed among the four ratings under each condition. These relative frequencies showed a decidedly significant shift in every instance from greatest emphasis on the positive-sympathetic ratings under



stimulating music to greatest emphasis on negative-hostile ratings under quieting music. Analysis of the leader's responses under the several conditions gave very similar results to those for the group, both in frequency and quality of participation. The hypothesis was statistically tested that the group's qualitative and quantitative response was causally related to or dependent upon the leader's response. This was rejected. It was concluded that background music supplied during group psychotherapy did alter the frequency and quality of participation, and that contrasted types of background music did exert differential effects in this regard. 13 references. 3 figures. 2 tables.—*Author's abstract.*

112. *An Analysis of Methods for Teaching Psychotherapy with Description of a New Approach.* JOAN FLEMING AND D. A. HAMBURG, Chicago, Ill. A. M. A. Arch. Neurol. & Psychiat. 79:179-200, Feb., 1958.

The authors of this paper have for several years studied the goals and methods of teaching psychotherapy, especially in the case conference situation, and have attempted to establish the advantages and disadvantages of the various ways of providing clinical material. In this paper they present a new method of teaching psychotherapy in a case conference, which they call the dynamimetic interview. With the resident psychiatrist assuming the role of therapist, the conference teacher selects a patient from his own practice and functions as this patient in an interview. This approximates the raw data of a psychiatric interview in a class situation, providing an accurate picture of the patient and allowing the class to become participant observers of the spontaneous interplay between therapist and patient. The device permits several special opportunities for teaching and learning, including: (1) Interruptions of the interview for purposes of discussion and elaboration; (2) a close study of the associations and interpretations of the therapist as they occur; and (3) examination of the immediate effect of the therapist's technical approach to a patient. The article includes a recorded dynamimetic interview with class discussion and the authors' comments on the teaching goals and learning experiences facilitated by the method. 4 references.—*Author's abstract.*

## neurology

### CLINICAL NEUROLOGY

113. *Neurology at the Crossroads.* G. H. MONRAD-KROHN, Oslo, Norway. Neurology 8:80-81, Jan., 1958.

This contribution to the round-table conference on the future of neurology at the international neurological congress in Brussels, 1957, is a plea for the unity of neurology. The points made may be listed as follows: (1) The highly gratifying development of technical ancillary methods (the electroencephalogram and so on) signifies a great advance, but also

involves a danger of dismembering the science of neurology and losing sight of the patient, *Homo sapiens*. (2) The future of neurology depends on the harmonious amalgamation and coordination of present and future subdisciplines. (3) The title of the congress of 1957, namely, "Congress of Neurological Sciences," is an unfortunate substitute for the old title "International Congress of Neurology," which, from the first congress held in 1931, has always been open not only to clinical neurology in its medical and surgical aspects but also to the basic sciences of neuroanatomy and neurophysiology. The new title only underlines that dismembering tendency that should be avoided. (4) The best insurance against this unfortunate dissolution of the science of neurology is an obligatory training of the budding neurologist in neuroanatomy, neurophysiology, and, last but not least, clinical neurology, whose sovereign position must be acknowledged. The complete and systematic clinical examination of the patient can still reveal a great deal, though it is often overlooked today. (5) The therapeutic aspects of neurology still need more attention, and neuropharmacology, a valuable and rapidly developing field, should be welcomed. (6) The international congresses of the future should be continued under the old name (International Congress of Neurology) as a forum for neurologists of various schools and experience. Here all should meet and focus their varying experiences on their common neurological problems. This does not, of course, exclude separate conferences of the various subdisciplines concerning their special areas. (7) Neurology should not stop studying functional neuroses. Aside from the undoubted existence of psychosomatic mechanisms and pathological conditions, there are as many or more somatopsychic mechanisms and conditions. Considering the ever-changing line of demarcation between these two categories, neurological research still has validity and therefore also a duty.—*Author's abstract*.

114. *Neurology in the General Hospital*. HENRY MILLER, Newcastle, England. *Brit. M. J.* 1:478-480, March 1, 1958.

This paper describes the practice of neurology in the general hospital and compares it with the work carried out in the more specialized institution. The work of the provincial neurologist in the large general hospital is much more closely related to general medicine than that of the special hospital, which tends to concentrate on rare and chronic cases. The neurologist in the general hospital is in a favorable position to study the neurological manifestations of general diseases, which may give clues to the pathogenesis of neurological disorders. He is more interested in therapy and etiology than in the minutiae of neurological disorders, and his research interests are orientated in this direction rather than toward the neurophysiological approach of his more specialized colleague, whose interest in clinical neurology sometimes appears to be mainly in the contribution it can offer to the study of normal neurological function.—*Author's abstract*.

115. *Clinical Significance of Impairment of Sound Localization*. LUIS P. SANCHEZ-LONGO AND F. M. FORSTER, Washington, D. C. *Neurology* 8:119-125, Feb., 1958.

The localization of sound was first investigated in a large series of normal subjects. In an effort to make the procedure used a standard test, an eye perimeter was utilized to control the direction of sound and an audiometer used to regulate the sound stimuli. Normal

subjects have great capacity to localize sounds coming from a horizontal plane. After the normal pattern of response was quantitated, the observations were extended to clinical cases. A group of 50 neurological patients were studied, including those with differing etiology and site of lesion. In most of the temporal lobe cases, an impairment of sound localization was present in the opposite auditory field; lesions of other areas of the brain failed to impair the capacity to localize sound. The temporal lobe is essential for the localization of sound; this function is similar to the localization of touch by the parietal lobe. 1 reference. 2 figures. 1 table.—*Author's abstract.*

116. *Neurologic Manifestations of Thrombotic Thrombocytopenic Purpura.* JOSEPH L. O'BRIEN AND W. A. SIBLEY, New York, N. Y. *Neurology* 8:55-64, Jan., 1958.

Thrombotic thrombocytopenic purpura is a rare vascular and hematologic disease in which neurologic signs and symptoms are often prominent. There are three underlying processes in the disease: (1) Thrombosis of small blood vessels, (2) hemolytic anemia, and (3) thrombocytopenic purpura. The neurologic manifestations are produced by the thrombotic vascular lesions, which, for the most part, are located in the gray matter of the cerebral hemispheres and brain stem. In the 11 cases of this disease reviewed, some alteration in consciousness, such as confusion, drowsiness, or disorientation, was found in 10 patients. Convulsive seizures were noted in 5, aphasia was present in 4, blurred vision in 3, paresis in 3, and papilledema in 2. The cause of the syndrome is not known, but it appears to be related to the collagen diseases. Treatment has been relatively unsuccessful except for recent cases in which a favorable outcome has been reported following splenectomy combined with adrenal hormone therapy. 35 references. 2 figures. 2 tables.—*Author's abstract.*

117. *Nature of Oedema in Paralyzed Limbs of Hemiplegic Patients.* A. N. EXTON-SMITH AND D. J. CROCKETT, London, England. *Brit. M. J.* 2:1280-1283, Nov. 30, 1957.

Edema of the paralyzed limbs occurred in 21 patients in a series of 130 cases (16 per cent) of hemiplegia. It was usually more marked in the arm than in the leg, and it was often confined to the hand. The time of onset varied from 2 days to 10 weeks after the hemiplegia. Samples of edema fluid were collected by miniature Southey-type needles, and their protein content was estimated by an ultramicro-Kjeldahl method. The protein content of fluid removed from the hands varied from 1.2 to 4 Gm./100 ml. (mean, 2.8 Gm./100 ml.). When edema occurred in the paralyzed leg (in 8 patients), it was found to have a lower protein content; in these patients, there was in addition either congestive cardiac failure or femoral venous thrombosis, which are conditions causing low protein edema. The high protein edema of uncomplicated hemiplegia is believed to be due to impairment of drainage of protein from the tissues by the lymphatics consequent upon loss of muscular activity. The evidence for this is based on the relationship between protein concentration and time, the electrophoretic pattern of the edema fluid and the determination of the protein content of capillary filtrate by an indirect method. Ancillary factors concerned in the formation of hemiplegic edema include increased venous pressure caused by lying on the affected arm, a dependent position of the paralyzed arm when it is flaccid, splinting, venous thrombosis, and congestive

cardiac failure. Arteriolar dilatation due to a disturbance of vasomotor regulation in the brain may also play a part. No evidence was found for an increase in capillary permeability to protein on the hemiplegic side. Hemiplegic patients who are confined to bed, and who subsequently develop edema in the paralyzed leg and not in the arm, should be suspected of having a venous thrombosis in the leg. 16 references. 1 figure. 2 tables.—*Author's abstract.*

## ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM

118. *The Effect of Drugs on Arousal Responses Produced by Electrical Stimulation of the Reticular Formation of the Brain.* P. B. BRADLEY AND B. J. KEY. *Electroencephalog. & Clin. Neurophysiol.* 10:97-110, Feb., 1958.

Thresholds for behavioral and electroencephalographic (EEG) arousal, produced both by electrical stimulation of the reticular formation and by afferent (auditory) stimulation, have been determined in cats, and graded doses of drugs given, after which the thresholds were re-established. Pentobarbitone caused the thresholds to rise, and doses considerably lower than the anesthetic dose blocked arousal responses completely. Chlorpromazine caused only a slight rise in the threshold for direct stimulation of the reticular formation but blocked arousal to afferent stimulation. Atropine, hyoscine, and physostigmine produced a marked divergence between EEG and behavioral thresholds, atropine causing the EEG threshold to rise and physostigmine causing it to fall, but in both cases without altering the threshold for behavioral arousal. Amphetamine caused the thresholds to fall until the animal was fully alert (both behaviorally and in terms of the EEG). Lysergic acid diethylamide (LSD-25) had no effect on the threshold for arousal produced by direct stimulation of the reticular formation, but caused a marked lowering of the threshold for arousal to afferent stimulation. The relationship between these findings and the results of previous investigations is discussed, and three sites of action for these drugs is suggested: (1) A direct action on the reticular activating system (pentobarbitone and amphetamine); (2) an action at the brain stem level but more closely related to afferent collaterals entering the reticular formation (chlorpromazine and LSD-25); and (3) an action not localized to the reticular formation but more diffuse and possibly related to diffuse thalamocortical projections. 24 references. 7 figures. 1 table.—*Author's abstract.*

## CEREBROSPINAL FLUID

119. *Clinical Significance of Low Cerebral Spinal Fluid Pressure.* HENRY A. SHENKIN AND B. E. FINNESON, Philadelphia, Pa. *Neurology* 8:157-163, March, 1958.

Cases of 32 consecutive patients whose spinal fluid pressures were below 70 mm. of water in the lateral recumbent position were reviewed. The series excluded patients who had undergone recent intracranial surgery or presented a postlumbar puncture syndrome. The presumption was made that the decrease in intracranial pressure was due to a decrease in the quantity of cerebrospinal fluid or to a diminution of the cerebrovascular bed. Patients were included who had suffered cranial trauma, observed generally several weeks after the severe trauma, but also in a few instances shortly after what appeared to be minor concussion.

Also encountered were 3 patients with spontaneous intracranial hypotension, characterized by headache (particularly in the upright position), vomiting, some rigidity of the neck, and photophobia. All 3 of these patients had no recordable intracranial pressure, and no etiological factor could be identified. There is good experimental evidence that a decrease in cerebral blood flow can be associated with a decrease in cerebrospinal fluid pressure clinically. Eleven patients were suspected of having an intracranial mass lesion because of mental obtundity; yet a low cerebrospinal fluid pressure was shown to be associated with a relatively acute depression (or insufficiency) of the cerebral circulation, accounting for the mental obtundity. In several instances, the use of a cerebral circulatory stimulant (carbon dioxide inhalations) and other general measures, such as a repair of dehydration, caused remarkable improvement in the status of the patient. There was also a patient with shock due to hepatic coma and another with alteration of consciousness due to barbiturate intoxication. Both of these were initially suspected of having a subdural hematoma, but the very low cerebrospinal pressure in each instance helped direct attention to the proper diagnosis. 12 references. 1 table.—*Author's abstract.*

## CONVULSIVE DISORDERS

120. *Management of Epilepsy.* CHARLES RUPP, JR., Philadelphia, Pa. J. A. M. A. 166:1967-1970, April 19, 1958.

Regardless of traditional teaching, the present-day neurologist considers epilepsy merely as a synonym for seizures rather than as a specific disease entity. From the etiological standpoint it has long been customary to distinguish between two broad categories of seizures: (1) the symptomatic and (2) the so-called idiopathic or essential epileptic group. In order to permit a rational therapeutic approach, it would seem preferable to consider those patients who experience seizures for which no adequate basis can be demonstrated as suffering from "seizures of undetermined cause" due to some as yet unknown pathophysiological disturbance too subtle to be detected by methods of investigation available at present. Acceptance of this concept allows the physician to pursue the same diagnostic and therapeutic principles in every patient with seizures. The physician's first responsibility is to determine whether or not the patient is suffering from some underlying disorder that is causing the seizures, the alleviation of which would eliminate or reduce their frequency. A thorough diagnostic survey is therefore indicated. The treatment of seizures is predominantly a medical problem. A definitive evaluation of surgical treatment is not yet possible, and surgery is absolutely indicated only in those patients in whom the attacks seem to be due to some intracranial mass such as a brain tumor, abscess, or subdural hematoma. The most valuable therapeutic agents at present are the anticonvulsants. The grand mal and focal types of seizures are most readily controlled, the petit mal somewhat less so, and the psychomotor types are the most resistant. Nine drugs are compared as to dosage, field of usefulness, and important side effects. With proper medical treatment, attention to general hygiene, and observance of certain restrictions, many patients can live normal, happy, productive lives. Physicians should lend their aid in securing enlightened legislation that will improve the occupational status and protect the legal rights of citizens who have been afflicted with seizures. 2 references. 1 table.—*Author's abstract.*

121. *Celotin in Patients with Refractory Epilepsy*. ROBERT S. DOW, JEAN P. MACFARLANE, AND JANICE R. STEVENS, Portland, Oregon. *Neurology* 8:201-204, March, 1958.

Sixty-two epileptic patients with various types of seizures previously partially or totally refractory to former anticonvulsant therapy were treated with N-methyl- $\alpha,\alpha$ -methylphenylsuccinimide (Celotin) in doses up to tolerance. In nearly all instances, the new drug was added to or replaced part of the previous maintenance medication. Of the 54 patients who received the drug long enough for adequate evaluation, 6 patients achieved complete seizure control, 6 were distinctly improved, and 5 experienced an increase in seizure frequency on the drug. Age, clinical seizure type, and electroencephalograph pattern bore little relation to the level of improvement. Principal side effects were sedation and ataxia, usually related to overmedication or additive effect with other anticonvulsant agents. Two patients demonstrated evidence suggestive of liver damage. Six patients noted undesirable psychic reaction, in two instances requiring hospitalization. Periorbital edema occurred in 3 patients, albuminuria in 1, and skin rash in 2. Other side reactions were minor and transient. This drug is a useful addition to the therapeutic armamentarium against the epilepsies, particularly in patients with residual abortive or minor seizures subsequent to fair control of major attacks. 5 references. 3 tables.—*Author's abstract*.

122. *Seizures and Syncope*. DEWEY K. ZIEGLER AND J. PRESTHUS, Kansas City, Mo. *Neurology* 8:33-40, Jan., 1958.

The problem of the seizure state masking as syncope is reviewed from clinical material derived from a large group of hospital patients and healthy young individuals who had admitted to frequent syncope. Patients were divided into groups consisting of those with typical syncope but no etiology other than emotional, those with typical syncope and other organic disease of the brain, and those with "atypical" syncope. One of the patients with typical syncope precipitated by emotional causes was found to have an abnormal resting electroencephalogram, and in another of these patients insulin-induced hypoglycemia produced an electroencephalogram abnormality. The clinical picture thought to be typical of emotionally induced (vasodepressor) syncope, that is, feelings of faintness, dizziness, and autonomic manifestations, did not reliably distinguish the epileptic from the nonepileptic group. A group of patients is described in whom episodes of altered state of consciousness, frequently accompanied by or followed by neurological signs, were apparently not due to vasodepressor syncope nor seizures. It is suggested that this last group is manifesting transient cerebral anoxia. 27 references. 6 figures.—*Author's abstract*.

## DEGENERATIVE DISEASES OF THE NERVOUS SYSTEM

123. *Psychiatric Aspects of Multiple Sclerosis*. ALFRED GALLINECK AND L. B. KALINOWSKY, New York, N. Y. *Dis. Nerv. System* 19:77-80, Feb., 1958.

The opinion usually expressed in textbooks that euphoria is the most frequent psychiatric complication of multiple sclerosis could not be confirmed by the authors from their private, mostly ambulatory patients. Euphoria may be prevalent in the late stages as a part of organic brain pathology (plaques). The most frequent psychiatric complication encountered



by the authors is depression occurring as a reaction to the actual or anticipated disability. Becoming acquainted with the diagnosis may precipitate such a reaction. Some patients will overemphasize factually minor symptoms in a neurotic fashion. Anticipation of future disability will aggravate this mechanism. Marked impairment of motor power or coordination may precipitate severe depressive reactions. In some cases, neurotic anxiety and over-awareness may form the bulk of patient's disability. Patients were observed who stopped working for good immediately after being acquainted with the diagnosis, although the organic findings did not justify such a degree of incapacitation. Major endogenous psychoses are not infrequent, occurring independently of multiple sclerosis. Endogenous depressions as well as schizophrenia could be observed. They should be differentiated from fleeting organic psychotic reactions (symptomatic psychoses), which do not develop into a lasting psychosis and which are due to organic pathology of the brain. The management of reactive depression due to multiple sclerosis and of neurotic overawareness of or overemphasis on physical symptoms has to be conducted along general psychotherapeutic principles. Phenothiazine derivatives, chiefly chlorperazine, were found to be helpful in mitigating the depressive affect. In severe depressive reactions, particularly in any with a suicidal risk, electroconvulsive therapy is indicated and can be given without any untoward effect on the organic pathology. The same applies to cases of major psychoses.—*Author's abstract.*

124. *The Familial Occurrence of Multiple Sclerosis.* WILLIAM KOSLOW, West Haven, Conn. *Confinia neurol.* 17:189-198, 1957.

The cases of a mother and two of her daughters, all having multiple sclerosis, are presented with particular reference to a discussion of exogenous and endogenous factors, which may be either predisposing or etiologic. A review of the literature concerning the familial occurrence of multiple sclerosis shows the importance various authors ascribe to the possible role of these factors. The distinction between predisposing and etiologic factors is discussed. Reference is made to the existence of hepatic damage in 2 of the author's patients and its frequency in multiple sclerosis. Chronic lead poisoning is mentioned as perhaps being of some importance in the pathogenesis of multiple sclerosis. 16 references. 1 figure.—*Author's abstract.*

125. *The Association of Cervical Spondylosis and Disseminated Sclerosis.* RUSSELL BRAIN AND M. WILKINSON, London, England. *Brain* 80:456-478, 1957.

Seventeen patients who suffered from both cervical spondylosis and disseminated sclerosis are reported. In 2 patients, the diagnosis was confirmed by autopsy. When cervical spondylosis and disseminated sclerosis are both present in the same patient, either condition may be thought to be the cause of the symptoms. Quite often it is possible to distinguish some symptoms and signs that are due to disseminated sclerosis and others that are due to cervical spondylosis; while still others, such as paraplegia, may be due to either or both. The differential diagnosis is discussed. It is thought that the association of the two disorders may result in a clinical picture somewhat different from that produced by either alone. The effect of trauma, especially to the neck, is described, and the possible effect of trauma by the spondylosis on a cord already damaged by disseminated sclerosis is discussed. Although



the demyelination was widespread throughout the brain and spinal cord in the 2 patients who were autopsied, the changes were very extensive at the level where compression by the spondylotic bars had occurred. The pathology and pathogenesis are considered, and the course and treatment of the combined disorders discussed. 4 references. 8 figures.—*Author's abstract.*

126. *Teamwork in Treatment of Parkinson's Disease.* LEWIS J. DOSHAY, New York, N. Y. Post-Grad. M. J. 23:7-16, Jan., 1958.

Parkinson's disease is one of the most common of the chronic diseases afflicting mankind. With proper treatment the patient can be kept vocationally and functionally useful for many years, but if neglected, he can become severely disabled. The general practitioner sees the patient at the start of the illness, when the greatest good can be achieved. This is the time when intensive treatment can protect the patient against the infirmities, postural abnormalities, and deformities of later years. The physician, however, cannot do the entire job by himself; he needs the wholehearted cooperation of the patient and family. The physiotherapist has to do his share in keeping the patient's muscles free and in setting up exercises necessary to ensure an erect posture, good balance, and a steady gait. The chemist and pharmacologist must supply the doctor with the proper tools that will control the many symptoms of this illness. The psychiatrist has to provide help for severe emotional problems, and the neurosurgeon must be able to combat symptoms that are beyond reach of medicinal therapy. The community, through an organized Parkinson foundation, must promote and support research into the cause of the disease and the means of preventing it. Also, because the care of disabled patients and those in advanced stages is a severe strain upon the physical and emotional resources of the average family and a great trial to the physician, the community must provide suitable equipment and facilities for the nursing and convalescent care of such patients. Not all the factors mentioned are required for every patient, nor is it necessary that all elements of the team work under a single roof; but the sum total of the contributions is needed for ultimate success in the prevention and control of Parkinson's disease. 17 references. 3 tables.—*Author's abstract.*

## DISEASES AND INJURIES OF THE SPINAL CORD AND PERIPHERAL NERVES

127. *Subarachnoid Hemorrhage with Papilledema Due to Spinal Neurofibroma.* L. HALPERN, S. FELDMAN, AND E. PEYSER, Jerusalem, Israel. A. M. A. Arch. Neurol. & Psychiat. 79:138-141, Feb., 1958.

A case of spinal neurofibroma causing subarachnoid hemorrhage is reported. There were no local signs referable to the tumor, but increased intracranial pressure and papilledema were present. The symptomatology of spinal subarachnoid hemorrhage is described. It is emphasized that, in spite of absence of signs indicating a spinal cord lesion and though evidence of cerebral involvement may be present, attention should be focused on the possible spinal origin of the bleeding if sharp pain in the back is the presenting symptom. Early myelography may help to establish the correct diagnosis, and thus prevent further damage

to the spinal cord and the serious and permanent cerebral complications that may follow repeated subarachnoid hemorrhage. The mechanism of increased intracranial pressure in spinal cord tumors and subarachnoid hemorrhage is discussed. 12 references.—*Author's abstract.*

## ELECTROENCEPHALOGRAPHY

128. *Chlorpromazine. Use to Activate Electroencephalographic Seizure Patterns.* LEVER F. STEWART, Philadelphia, Pa. *Electroencephalog. & Clin. Neurophysiol.* 9:427, Aug., 1957.

A clinical investigation was carried out on 50 epileptic patients to determine the efficacy of chlorpromazine as an activator of epileptiform discharges in the electroencephalogram. Statistically valid control methods were employed. It was concluded that chlorpromazine, used in conjunction with hyperventilation, is a useful method of activation in the electroencephalographic study of epileptic patients. The activation obtained was always characteristic of the patient's habitual seizures. The only factor found to correlate positively with incidence of activation was frequency of attacks, a significantly higher number of patients having more than five attacks a month being activated than of those having five or less than five attacks per month. Dosage did not have to be scaled to patient weight for uniform effectiveness or avoidance of toxic side effects. The only serious side effect encountered was that of orthostatic syncope, and this was rare (2 to 4 per cent). Chlorpromazine can not be considered a convulsant agent such as pentylenetetrazol, since it does not produce attacks in non-epileptics or in unpre-disposed individuals. Its use in combination with pentylenetetrazol for those who fail to respond to either drug alone would seem to be pharmacologically justifiable. The author's results were compatible with the generally accepted conclusion that chlorpromazine acts predominantly on the reticular system, and he felt that its effectiveness as an activator of epileptiform potentials is a consequence of this action and not due to cerebral anoxia. He also felt that the use of chlorpromazine to control seizures is, in most cases, unjustifiable, and that it does not potentiate the anticonvulsant action of the barbiturates. The production of seizures by chlorpromazine in nonepileptic patients without pre-disposing cerebral damage or latent electroencephalographic abnormality is a rare occurrence if it exists at all. It is recommended that the intravenous route of administration be avoided with this drug. The use of chlorpromazine to obtain artifact-free tracings in restless or uncooperative patients or those with tics or tremors is recommended.—*Author's abstract.*

129. *The Significance of the EEG for the Diagnosis and Localization of Cerebral Tumours.* O. MAGNUS AND J. H. A. VAN DER DRIFT, Wassenaar, Holland. *Folia Psychiat., Neurol. Neurochir. Neerl.* 2:118-125, April, 1957.

The technique used is briefly described, and the general aspects of the contribution that the electroencephalogram (EEG) can make in the diagnosis of cerebral tumors are discussed. It is stressed that, after an independent EEG report has been given, additional value may be derived from a correlation with other clinical and laboratory findings, one of the reasons for this being that the EEG shows fundamentally different aspects of a lesion than other

methods. In 194 patients with hemispherical tumors, the localization was correct in 169 (87 per cent) and nearly correct in 10 (5 per cent). The side of the lesion was predicted correctly in 8 patients (4 per cent); no localization was possible in 3 (1.5 per cent) and a faulty localization was reached in 4 (2 per cent). In no instance was the tumor localized on the wrong side. In 10 patients in whom the lesion was localized by the EEG on the same side as a hemiparesis, the EEG lateralization proved to be correct in every case. In patients with tumors of the posterior fossa and the brain stem, either a normal EEG or an EEG with bilateral disturbances was found. 6 figures. 2 tables.—*Author's abstract.*

130. *Electroencephalographic Alpha Rate in Adults as a Function of Age.* WALTER J. FRIEDLANDER, Boston, Mass. *Geriatrics* 13:29-31, Jan., 1958.

The changes in the electroencephalographic (EEG) alpha frequency in adults that occur with age have not been clearly defined. Most of the studies of EEG changes associated with age, once the adult pattern has been established, have dealt with the occurrence and type of abnormalities seen in elderly persons. This paper was a statistical study to determine whether there is an alteration of alpha in the adult. The alpha rate was counted in the records of 814 general hospital patients who had normal EEG's and sufficient alpha in their recordings to allow for the application of the counting method used. When the alpha rate was plotted against age, the over-all distribution was found to be significant ( $p < 0.001$ ). When the patients were grouped by bidecades and the alpha rate of one decade was compared with the next older decade, the relationship between these age groups and the alpha rate was found to be quite significant ( $p = 0.05$  to  $0.001$ ); this was not true when single decades were compared. Having demonstrated a significant relationship between alpha rate and age, the next step was to determine the nature of this relationship. This was done by plotting the per cent of alpha rate in each decade age group. It was found that as age increased there were more 10 to 12/second and fewer 8 to 9/second records. Hence it was concluded that there is a slow decrease of alpha rate occurring over the full span of adulthood. It is recognized that this conclusion is valid only for hospital patients, but it is tempting to make the assumption that the phenomenon may be common to the population as a whole. 5 references. 2 tables.—*Author's abstract.*

## INFECTIOUS AND TOXIC DISEASES OF THE NERVOUS SYSTEM

131. *Diagnosis of Cerebral Schistosomiasis.* JAMES F. HAMMARSTEN, Oklahoma City, Okla. A. M. A. Arch. Neurol. & Psychiat. 79:132-135, Feb., 1958.

Cerebral schistosomiasis may produce a variety of neurological symptoms, such as headache, language dysfunction, paralysis, and Jacksonian or grand mal seizures. Therefore, a patient who presents such symptoms and who has resided in an endemic area even years before should be studied for possible cerebral schistosomiasis. The search for ova in the feces is a difficult and time-consuming procedure. This report demonstrates the efficiency of biopsy or a rectal specimen in the diagnosis of schistosomiasis. The 12 patients on whom the report is based were hospitalized at two Veterans Administration hospitals. All had schistosomiasis japonica, and all had been in the Philippine Islands. From 3 to 10 years

had elapsed between the time of exposure and the diagnosis. Only 2 patients had a definite history of acute schistosomiasis while in the endemic area. Four of the 12 patients had seizures, 2 had focal seizures alone, 1 had generalized grand mal and focal seizures, and 1 had psychomotor attacks. In 3, the diagnosis was first established by a craniotomy. A positive Wassermann reaction in the spinal fluid with a negative Wassermann reaction in the blood was present in 2 patients. Whereas eosinophilia was present in most of the 12 patients, hepatomegaly, splenomegaly, and abnormal results of liver function tests were observed in only a few of them. In this connection, the author points out that, whereas hepatic and splenic damages are frequent in long-term residents of endemic areas, this is not the case in short-term residents. Stool examinations were positive in only 2 of the 12 patients, despite numerous studies. In contrast, the biopsy of a rectal specimen was positive in all but 1 patient. 19 references. 1 figure. 2 tables.—*Author's abstract.*

132. *Collagen Disease of the Nervous System: With Particular Reference to the Syndrome of Infectious Polyneuritis.* RICHARD C. TURRELL AND E. ROSEMAN, Louisville, Ky. *South. M. J.* 51:169-172, Feb., 1958.

Major involvement of the nervous system occurred in 25 proved cases of collagen disease collected in a five year period. In each instance the patient had been referred for consultation because of an apparently primary neurological disorder. Included were 14 patients with periarthritis nodosa, 6 with lupus erythematosus, 4 with scleroderma, and 1 with dermatomyositis. Ten persons presented the syndrome of infectious polyneuritis with symmetrical distal sensory loss and proximal motor weakness. The others were grouped into categories of stroke in a young person, organic psychosis, or meningoencephalopathy. Multiple systems were involved in all cases. Duration of the disorder was frequently long and characterized by remissions. The greatest incidence was between 30 and 40 years, but all ages were represented. There was no particular sex predilection to either the type of collagen disturbance or the presenting neurological picture. ACTH and cortisone produced prolonged remissions in many. The neurological manifestations, coupled with multiple system involvement, offered a unique clue to the diagnosis. 7 references. 2 tables.—*Author's abstract.*

133. *Bilateral Loss of Vision from Cerebral Infection.* CHARLES SYMONDS AND I. MAC KENZIE. *Brain* 80:415-454, 1957.

A review from the literature is presented of 29 patients in whom loss of vision in both halves of the visual fields was associated with the postmortem observation of bilateral occipital lobe infarction. The clinical data of 20 patients from the literature in whom comparable symptoms were observed without postmortem examination are also summarized. Nine further observations of the syndrome are presented, 4 with postmortem confirmation, and the material thus derived from 58 cases is discussed. The loss of vision may be sudden or gradual. Both half fields may be affected at the same time or in succession. The common mode of onset is a sudden loss of both half fields. The pattern of the visual fields when there is partial sparing or recovery of vision indicates that the area most often preserved corresponds with, or lies within, a circle extending to about 10 degrees from the fixation points. In the more peripheral parts of the visual fields, the sectors adjacent to the vertical meridian are

not infrequently spared when there is loss of the remainder. Selective loss of central vision is a rare, but well-authenticated, occurrence. Psychological disorder, including spatial disorientation, visual agnosia, denial of blindness, visual hallucinations, and other symptoms, is an inconstant, but sometimes conspicuous, feature of the syndrome. The anatomical basis of the visual field defects is discussed, and the arterial blood supply to the visual cortex and optic radiations is considered in relation to the clinical and pathological data. The pathogenesis of the syndrome is discussed with especial reference to the occurrence of simultaneous loss of vision in both halves of the visual fields, and to the postmortem finding, in a significant proportion of the cases in which full pathological data are available, of thrombosis in the basilar or vertebral arteries. The conclusion is drawn that the most frequent cause of bilateral occipital lobe infarction is embolism of the calcarine arteries. The emboli may result from valvular disease of the heart, auricular fibrillation, or coronary thrombosis, but are more often derived from thrombus formed within the basilar or vertebral arteries as the result of atherosclerosis. 66 references. 14 figures.—*Author's abstract.*

### INTRACRANIAL TUMORS

134. *Brainstem Tumors in Children.* PATRICK F. BRAY, SIDNEY CARTER, AND JUAN M. TAVERAS  
Salt Lake City, Utah. *Neurology* 8:1-7, Jan., 1958.

A brainstem tumor should be suspected when gait disturbance, squint, dysarthria, or facial weakness is observed in a child. The average age of onset of symptoms is about 7 years. Headache and vomiting are early symptoms but do not necessarily reflect increased intracranial pressure because this either occurs late in the course of the disease or not at all. Pyramidal tract signs, involvement of multiple cranial nerve nuclei, or cerebellar signs are the usual physical findings; a hemiparesis with hyperactive tendon reflexes and a Babinsky sign is commonly seen. The most commonly affected cranial nerve is the facial nerve but ninth and tenth nerve involvements occur frequently, accounting for the common symptoms of dysarthria and dysphagia. Sensory involvement of the trigeminal nerve is often noted, but the motor branch is seldom affected. Deafness occurs occasionally. Cerebellar signs of ataxia and nystagmus are common, and gaze paralysis is often seen. Gaze paralysis is very important clinically because it helps to localize the lesion within the brain stem. Lateral view pneumoencephalograms are important in establishing the diagnosis. A small amount of air (10 to 30 ml.) is often sufficient for diagnosis. Posterior and upward displacement of the aqueduct of Sylvius and the fourth ventricle is usually seen. When the tumor is quite large, elevation of the posterior part of the third ventricle may occur. Dilatation of the lateral ventricle may occur in some patients. Radiation therapy produced definite clinical remission in 24 of the 37 patients treated. This improvement is often not apparent until 3 to 6 weeks after the initiation of treatment. The disappearance of cranial nerve and pyramidal tract disturbances are the most common reflection of a beneficial response to therapy. In the usual case this clinical improvement is only temporary. A tumor dose of 2000 roentgens is given to children younger than 2 years of age and 3000 roentgens to children between 3 and 4 years of age; and the dose is increased gradually until the full dose of 4000 roentgens is used in children older than the age of 8 years. This dose of radiation therapy is delivered over a period of 28 days. 11 references. 8 figures.—*Author's abstract.*

## NEUROPATHOLOGY

135. *The Classification of Gliomata on the Basis of the Pathogenesis.* F. C. STAM, Amsterdam, Holland. *Folia Psychiat., Neurol. Neurochir. Neerl.* 2:136-140, April, 1957.

The classification of the glioma has always been closely connected with the various views on the pathogenesis. The theory of Ribbert (that gliomas originate from embryonic glial cells) has stimulated the cytological study of glioma and the study of the histogenesis of the central nervous system. The article states that Ribbert's theory is unfounded. Gliomas do not originate from embryonic glial cells but must be explained by neoplastic transformation of fully differentiated glial cells. In the pathogenesis of glioma, there are two agents at work: proliferation and anaplasia. The different subtypes of glioma are the result of proliferation followed by a varying grade of anaplasia. The classifications of Kernohan and Ringerts are based on this histopathogenetic view. It is pointed out that there are two types of multiform glioblastoma: the primary and the secondary. The secondary glioblastoma arises in a diffuse astrocytoma or oligodendroglioma by anaplasia. Sometimes these secondary glioblastomas are multiple. In the primary glioblastoma, the proliferation and anaplasia are balanced. Finally, differences in the histology and the duration of the illness in primary versus secondary glioblastoma are discussed. 5 figures.—*Author's abstract.*

136. *Termination of the Central Pain Pathway in Man: The Conscious Appreciation of Pain.* DAVID BOWSHER, Liverpool, England. *Brain* 80:606-622, 1957.

Terminal degeneration has been traced by modern silver methods in 4 suitable patients dying between 14 and 50 days after anterolateral cordotomy for the relief of pain. Degeneration was found principally in the nucleus ventralis posterolateralis of the ipsilateral thalamus. It was also found in the same nucleus of the contralateral thalamus, and fibers of passage were seen in the dorsal part of the posterior commissure. Fibers from the anterolateral quadrant of the cord also project to: (1) The lateral reticular nucleus of the medulla ipsilaterally; this nucleus projects to the cerebellum; (2) the nuclei of the superior colliculi and to a lesser extent the inferior colliculi bilaterally; and (3) nuclei of the medial reticular nuclei of the brain stem, very heavily and bilaterally; a few of these fibers reach as far rostrally as some of the reticular or recruiting nuclei of the thalamus; the nucleus reticularis thalami and the centrum medianum each receive a few fibers. It is pointed out that, although spino-reticular fibers are quantitatively the largest component of the anterolateral ascending funiculus of the cord, and though these are probably stem fibers rather than collaterals, loss of pain and thermal sensibility is the only result of section of these fibers. Information regarding the rostral trans-synaptic projection of the reticular nuclei is considered. It is suggested that direct spinothalamic fibers are responsible for sharp localized pain sensation with a brief latency and no afterdischarge; whereas the spinoreticulothalamocortical system is responsible for the sensation of poorly localized, diffuse pain, which has a long latency and persists after withdrawal of the nocigenic stimulus. It is also pointed out that these two pathways diverge at the level of the olive to meet again at the centrum medianum. Surgical intervention between these two points could not, therefore, be expected to abolish both types of pain. 78 references. 10 figures. 2 tables.—*Author's abstract.*



## NEURORADIOLOGY

137. *The Process of Demyelination in the Central Nervous System. II. Mechanism of Demyelination and Necrosis of the Cerebral Centrum Incident to X-Radiation.* CYRIL B. COURVILLE AND RICHARD O. MYERS, Los Angeles, Calif. *J. Neuropath. & Exper. Neurol.* 17:158-173, Jan., 1958.

This study is concerned with the demyelinative and necrotic changes found in the cerebral centrum of a 15 year old boy who died 28 months after exposure of the head to an excessive single dose of roentgen rays for ringworm of the scalp. These changes were found to be precisely coincident with and proportionate to the degree of alteration in the small cerebral arteries within the affected area. The primary vascular lesion, the apparent direct effect of irradiation, seemed to be a progressive thickening with hyalination (collagenous thickening) of the walls of the arterioles and only minimal changes in the venules. It is believed that the resultant degenerative changes in these vessels (necrosis en masse, acute or subacute rupture, or progressive deterioration, or "fibrinoid necrosis") were probably secondary to nutritive disturbances in the vessel after proximal occlusion. The deposition of iron salts in the walls of altered blood vessels and in the less profoundly damaged white matter seemed to occur as a late result. A comparison is made between the less severe forms of demyelination after roentgen ray exposure and the central lesion of diffuse sclerosis, raising the question as to the possible genesis of diffuse sclerosis in some impairment of circulation. 23 references. 6 figures.—*Author's abstract.*

## TREATMENT

138. *Facilitating Locomotion in Neurological Disease of Lower Extremities. Description of a New Appliance.* IRVING M. LEVINE, Boston, Mass. *J. A. M. A.* 166:351-353, Jan. 25, 1958.

The appliance was designed to facilitate flexion movements of the hip and knee and at the same time to take advantage of a low leg brace when worn. It has several advantages: it can be manufactured cheaply; it is easy to apply; and it can be comfortably worn. Moreover, and most important, the patient is able to put on the entire apparatus without assistance. There are three essential parts to this leg-lifting apparatus: a lumbosacral belt, a high cuff, and a Klenzak foot-drop brace. These parts are attached to one another by elastic straps. The lumbosacral belt, in addition to serving as a fulcrum for elastic strap, helps support and stabilize weakened back muscles. It is made of coutille with metal reinforcements and is large enough to girdle the low back and abdomen. The appliance functions in the following manner. A forward or upward movement of the hip on the involved side causes a recoil and contraction of the elastic straps, thereby flexing the hip and the knee, while the brace corrects foot drop and toe drag. This action requires minimal voluntary forward movement of the hip. The downward stroke of the limb is then carried out by the hip extensors and quadriceps. Thus, the patient walks with a more fluid "knee action" movement. 1 figure. 1 table.—*Author's abstract.*

volume xix, number 3, September, 1958 | 267



## BOOK REVIEWS

*Analyzing Psychotherapy.* SOLOMON KATZENELBOGEN. New York, N. Y. Philosophical Library, 1958. 126 pp. \$3.00.

This informative book fulfills its goal of acquainting the reader with the meaning, scope, and methods of psychotherapy. In addition, the author describes his own practical, dynamic, and human approach to therapy. A brief account of the symptoms of the various individuals who seek psychotherapy is presented, including feelings of inferiority, insecurity, depression, anxiety, and inadequacy, as well as desire for approval and tendencies to withdrawal, in keeping with the approach of Adolf Meyer. Since the patient's cooperation is essential, his desire to undertake therapy is mentioned as one of the prime prerequisites. The qualifications of the psychotherapist are discussed, his personality being considered to be as important as his knowledge and experience. Among the qualifications listed are maturity, being a good listener and having a lively interest in people, and the capacity to concentrate on what the patient says. Maturity in particular is necessary if the therapist is "to evaluate facts without significant interference of [his own] emotions, wishes, desires, likes, dislikes, apprehensions, fears . . . ." The author describes the methods of psychotherapy: suggestion, hypnosis, persuasion, enlightenment, Freudian psychoanalysis, and so on. He says of transference that, if it were only an unconscious review of the past experience of the patient with a parent, for example, the patient would merely be reliving the past. However, he believes that there is a difference, that the patient recognizes it, and that transference can be worked with therapeutically. He also believes the Freudian couch and free association may be helpful with some patients only because they may feel the need of some special procedure. He notes that the type of therapy to be used depends on many factors, including the nature of the patient's illness and his capabilities and deficiencies. Environmental factors and their role in therapy are recognized. The psychoanalytical approach is explained, with clarification of the much-used terms id, ego, superego, and so on, as are the author's own interesting views. Rational therapy is fully treated. Effective techniques, such as timing as regards interpretation in therapy, suggestibility, and "dehabituation," are cited. The author believes that the method of therapy used is not as important as a "good human rapport between the patient and the psychotherapist," and that results with various methods are about the same if rapport is attained. The book should be a welcome volume in the libraries of students as well as practitioners in the field of psychiatry.—Leon Konchegul, M. D.

*The Psychoanalytic Study of the Child.* Vol. 12. RUTH S. EISSLER, ANNA FREUD, ET AL, Editors. New York, N. Y. International Universities Press, 1957. 417 pp. \$8.50.

This is the latest volume of an annual that has attained an important place in the literature of child psychiatry. The idea for the series originated with Ernst Kris, who died in 1957, and volume 12 begins with an excellent, though short, account of his scientific work by a colleague, Heinz Hartmann. The four sections of the book are called "Psychoanalytic Theory," "Aspects of Early Development," "Clinical Contributions," and "Applied Psychoanalysis." The articles are so diversified as to be beyond the scope of this review; among other things, they deal with repression, giftedness, moods, defenses, dreams, delin-

quency, adolescence, and motility. They are interesting, concise, and clear. The volume is particularly useful for those interested in child psychiatry and related fields. Volume 13 will be dedicated to the memory of Kris.—*Irving L. Berman, M. D.*

*Instinct in Man.* RONALD FLETCHER. New York, N. Y. International Universities Press, 1957. 339 pp. \$7.50.

In this important book, the author attempts to re-evaluate and synthesize doctrine on the controversial subject of instinct. He discusses the ideas of the earlier writers (James, McDougall, Drever, and others) and coordinates these with the recent findings of the "comparative ethologists" who study animal behavior and the theories of psychoanalysis, especially as they pertain to instinct. This is an ambitious undertaking, not previously attempted, and the author derives from it a comprehensive theory of his own that he elaborates in relation to comparative psychology, learning theory and the concept of intelligence, social psychology, sociological theory, and education. As a result of the misconception that instincts are rigid and unmodifiable inherited sequences of behavior, in the first third of the twentieth century much criticism was leveled against the use of the term as applied to man. The result was that the word was almost completely abandoned by psychologists. The most extreme objections came from the behaviorists, who wished to reduce all inherited reactions to a series of reflexes. However, it was not long before the words "drive" and "need" made their appearance in attempts to explain human motivation and behavior. These terms are, it seems, merely new names for the same old instincts, and surely no one today with any knowledge of the biological sciences would accept the extreme behaviorist view. Instead, the concept of developmental levels may serve as a basis for a new formulation of the theory of instincts. This concept does not, in fact, differ very much from the older ideas, as anyone acquainted with the earlier writers will discover. An instinct is not necessarily a rigid, unmodifiable sequence of behavior and certainly is not so in man. The author says, "The trains of unlearned behavior which we find among animals are . . . the manifestations of . . . inherited features of structure, neurophysiological process, behavior, and experience which are activated in a coordinated manner when the animal encounters the various situations of its environment; and the concept . . . used to describe the way in which these features are related . . . is the Instinct. . . . Among the simplest animals the correlation of these several features is very closely and rigidly established by heredity"; this is sufficient to explain the greater part of their behavior. But, for the higher animals and especially for man, only "certain distinguishable cravings, periodically recurring and relatively persistent impulses" are held to be inherited. "Automatic behavioral mechanisms are not established by heredity" but must be learned and "permit of great modification. . . . The emerging Ego has to learn how to control these demands"; tension and emotion arise; delay must be tolerated. In the lower animals, where there is little or no delay and the behavioral sequence is automatically carried through, it is postulated that emotion and tension are minor components of the experience or are entirely absent. It is apparent that this formulation bears considerable similarity to the theories of psychoanalysis, in that "instinctual experience, mainly in the form of ineradicable inherited impulses, comprises an extremely important and extensive part of . . . mental life." It is the perceptual and experiential aspects that

are highly modifiable in man and that are accompanied by emotion, the nature of which is dependent upon whether the goal is attained or thwarted. The ethologists, a European group of students of animal behavior working since the 1930's, agree that in higher animals there is a strong pleasurable subjective correlate accompanying the attainment of the goal toward which the animal is striving. They postulate a mechanism similar to displacement, called "sparking over, in which instinctual energy may find expression in behavior patterns belonging to a quite different instinct." They cite instances called "imprinting", where the selection of a love object in adult life may be strongly influenced by the character of the individual's early love object. Parallels between men and animals and between the conclusions of early writers on instinct and psychoanalysts or ethologists or both may be somewhat exaggerated in the author's synthesis. Nevertheless they are striking enough to merit further study and to make it evident that this book is a valuable contribution to an understanding of the hereditary bases of behavior and their evaluation on all levels of functioning.—Margaret Ives, *Ph. D.*

#### *Books Received for Review*

- The Unbelonging.* ALICE M. ROBINSON. New York, N. Y. The Macmillan Company, 1958. 165 pp. \$3.95.
- The Neuroses and Their Treatment.* EDWARD PODOLSKY, Editor. New York, N. Y. Philosophical Library, 1958. 555 pp. \$10.00.
- A Search for Man's Sanity—Selected Letters of Trigant Burrow.* WILLIAM E. GALT, Editor. New York, N. Y. Oxford University Press, 1958. 615 pp. \$8.75.
- On Not Being Able to Paint.* MARION MILNER. Bloomington, Ind. Indiana University Press, 1957. 189 pp. \$4.50.
- Shame and the Search for Identity.* HELEN MERRELL LYND. New York, N. Y. Harcourt, Brace & Co., 1958. 318 pp. \$5.75.
- The Call Girl: A Social and Psychoanalytic Study.* HAROLD GRUNEWALD. New York, N. Y. Ballantine Books, 1958. 245 pp. \$4.50.
- Hypnography—A Study in the Therapeutic Use of Hypnotic Painting.* AINSLIE MEARES. Springfield, Ill. Charles C Thomas, 1957. 271 pp. \$7.75.
- Maimonides on the Preservation of Youth.* HIRSCH L. GORDON, translator. New York, N. Y. Philosophical Library, 1958. 92 pp. \$2.75.
- Annual Survey of Psychoanalysis.* Bloomington, Ind. Indiana University Press, 1958. 770 pp. \$12.00.

---

#### American Psychomatic Society to Meet

The sixteenth annual meeting of the Society will be held on May 2 and 3, 1959, at Chalfonte-Haddon Hall, Atlantic City, N. J. Titles and abstracts of papers to be considered for presentation may be submitted until Dec. 1, 1958. Each presentation will be limited to 20 minutes. Eight copies of each abstract should be sent to Milton Rosenbaum, M. D., Chairman, Program Committee, 265 Nassau Road, Roosevelt, N. Y.